How to manage unintended consequences. Leadership Series, following page 32

Bookstore aisles? The cinema? No place is off-limits for desperate recruiters like Amy Naples. Page 67

COMPUTERWORLD

The Newsweekly for Information Technology Leaders
News updates, features, forums: www.computerworld.com
January 20, 1997 • Vol. 31 • No. 3 • 126 pages • $3/Copy $48/Year

IBM moves AS/400 to high end

▸ *CISC-based IS shops face upgrade decision*

By Tim Ouellette

IBM THIS YEAR will stretch its AS/400 midrange system to the high end with plans for new multiprocessor systems and an upgraded operating system.

Sources close to the company said it will roll out RISC-based systems, tentatively dubbed the 600 series, that offer eight- and 12-way multiprocessing for high-end customers.

COURTESY MOOD

California Bar's David Jones is happy with current RISC models

And a new version of the OS/400 operating system, Version 4 Release 1, also will ship to handle heavy lifting for the new hardware.

"They are going to break open the top end of their line," said Tom Bittman, an analyst at Gartner Group, Inc. in Stamford,

IBM, page 16

U.S. firms go offshore for cheap year 2000 fix

By Jaikumar Vijayan

PLENTY OF CHEAP foreign labor is driving more U.S. firms to hire overseas programming companies to do their year 2000 conversion work.

Exact figures aren't available, but experts who track the field said the number of firms hiring foreign programming shops to do year 2000 work could swell significantly during the next year as the countdown to 2000 begins in earnest.

One company that has committed to offshore outsourcing is Consolidated Edison Company of New York. It already has contracted — and successfully completed — two pilot projects with fixed-cost contract firms in India and Ireland. Con Edison now is on the verge of contracting all its 105 date-sensitive pro-

Year 2000 fix, page 17

By Bob Wallace **What's more crucial — a last-minute long-range field goal that ices a Super Bowl victory? Or having the computer systems to provide rabid fans nationwide with official merchandise after the ball sails through the uprights?**

For sports apparel firms

Sports, page 105

Even before the NFL conference champions were decided, manufacturers had apparel in the pipeline

McAfee to push antivirus updates through the Web

By Mitch Wagner

MCAFEE ASSOCIATES, INC. today plans to announce a deal to distribute updates of its antivirus software automatically over the Internet, without human intervention.

The deal with BackWeb Technologies, Inc. was designed to be a huge labor-saver for information systems departments. IS staffs will avoid having to retrieve and install antivirus updates, which will be available on an hourly basis from McAfee.

The distribution method

McAfee, page 12

Mill disaster fires up planned IS overhaul

By Matt Hamblen
LAWRENCE, MASS.

THE FIRE THAT engulfed the Malden Mills complex here in December 1995 — causing more than $300 million in damage — could have shut down the Polartec fabric maker for good. Instead, it invigorated the mill's workers and accelerated a previously planned $10 million to $15 million information and automation systems overhaul.

The day after the fire, Aaron Feuerstein, president and co-owner of Malden Mills Industries, Inc., wowed observers by pledging to rebuild locally and promising to pay idled workers. His bold directive inspired his top managers, who immediately made the massive system redesign their top priority.

In an unusual move, a top business executive — not an IS manager — was put in charge of the system redesign. Michael Backler, corporate director of

IS overhaul, page 28

INSIDE THIS ISSUE

NEWSPAPER

#BXBBJFT# ********** CAR-RT SORT ** C035
#48183UDU380SR003# JUL 96 001 010628###
UNIVERSITY MICROFILMS INT 0000
SERIAL PUBLICATIONS
300 N ZEEB RD 13
ANN ARBOR MI 48103-1500

www.microsoft.com/office/97/now/

do more

now/

It's like a dream you might have had:
one **beautiful fluid motio**
management dances/users share and
collaborate and work together/
you (not needing to answer questions)

©1997 Microsoft Corporation. All rights reserved. Microsoft and Where do you want to go today? are registered trademarks and Outlook is a trademark of Microsoft Corporation.

: information moves in
on through the company/
work less/
read.

Now/ Microsoft® Office 97 is here. It's smarter, friendlier and webbier. Every application has significant improvements—natural-language formulas in Microsoft Excel and "freehand" table drawing in Word, to name a few. There's also a new program, the Outlook™ desktop information manager, that will thrill your control freaks and just plain organize everyone else. The friendlier part comes in the form of Office Assistants, intelligent critters who watch what your users do and offer suggestions, hints and walk-throughs (so you're less likely to be called, paged, or treed by a cranky mob). As for webbiness, not only can your people instantly link to Web sites from inside any app, they can insert hyperlinks from any one document or spreadsheet to any other. And they can save anything in HTML. All using what they already know. (Hello, intranet!) You'll be happy to know that 50% of Office 97 code is shared among apps. Plus, more housework is done at install. And the Network Installation Wizard is your friend. Now/ pinch yourself.

Where do you want to go today?® www.microsoft.com/office/ **Microsoft®**

UP FRONT

Better, not bigger

Microsoft arguably has the best software-testing organization in the world. Yet even Microsoft couldn't prevent a bug fix for Windows NT 4.0 from being released that was so buggy it crashed hundreds of users' servers (CW, Jan. 13).

This situation isn't unique. If you want to see an IS manager's face flush, ask about the state of software quality. The software industry continues to push bloated, buggy products packed with features that only a few people will use. Yet IS must dutifully go along with the endless upgrade cycle or risk losing consistency across an organization.

Software is getting worse because it's becoming impossible to test the stuff. Microsoft's new Office 97 is a 121-M-byte monster. There's no way to find all the possible flaws in a product that big. And most users will run Office simultaneously with a fistful of other applications, utilities and Internet-sniffing background agents from vendors of all stripes. Is it any wonder some of the best-selling software in the past two years has been utilities that intercept and manage software errors?

Software is getting worse because it's becoming impossible to test the stuff

At the same time, the pressure to get products to market is pushing vendors to test software in the field. Now products are no longer shrouded in secrecy; early versions are posted on Web sites for users to download and test. Endless patches and bug fixes follow. No two desktops are the same anymore.

It's chaos out there, and the mess invariably gets dropped in the lap of an ill-prepared and understaffed IS department.

The frustration building in IS organizations may erupt in widespread disinterest. Only about a quarter of Office users upgraded to Office 95. What if only a quarter of them took the leap to Office 97? Maybe that would send the industry a message: Bigger software isn't necessarily better. Focus on helping us manage what we've already got.

Paul Gillin, *Editor*
Internet: *paul_gillin@cw.com*

THE FIFTH WAVE
BY RICH TENNANT

E-mail Rich Tennant at thewave@tiac.net

IS brings good things to GE

▸ *Quality program, several technology projects key to company's resurgence*

By Thomas Hoffman

WHEN GENERAL ELECTRIC Co. last week reported that it earned $7.28 billion last year, the news did more than illustrate the success of GE's year-old quality improvement push.

It demonstrated just how valuable the company's information management group has been to GE's renaissance.

A commitment to quality and customer focus has been the linchpin of GE's success, but several key technology projects have also helped. One of those projects is GE's Trading Process Network, an Internet-based electronic commerce system that is expected to generate $1 billion in contract opportunities for global suppliers this year.

And GE's retail customers now can harness a GE Capital Corp. data warehouse that contains information on 12 million private-label and commercial credit-card customers.

That should help companies such as Casual Corner Group, Inc. It can identify its most profitable customers and target promotions designed to lure those customers to its stores, said Karen Tyson, director of strategic marketing at the 1,000-store chain in Enfield, Conn.

GE in the past year has invested $200 million in quality training and systems that measure the program's effectiveness by capturing metrics, including frequency and type of manufacturing defects.

Most of Fairfield, Conn.-based GE's 12 business units broke even on their investments. This year, GE expects an additional $300 million quality investment to generate $400 million to $500 million in savings.

CIO Gary M. Reiner

Heads GE's quality improvement efforts

"Last year was the learning curve; this year we expect much bigger results," said Elizabeth Gallucci, leader of best practices at GE Capital in Dacula, Ga.

GE's Six Sigma quality program isn't unique — the company borrowed it from Motorola, Inc. But experts said GE's ability to successfully use information technology to measure its quality control progress and to tighten its ties with customers has been unparalleled.

"There tend to be hit-or-miss approaches to what constitutes good quality," said Stephen A. Bender, executive director at The Quality Connection, a management consultancy in Englewood, Colo. "That's the key difference between those who use IT effectively and those who don't."

GE Chairman John F. Welch's commitment to the quality program and his understanding of IT's role in it have helped separate GE from the rest of the pack, said Richard A. Henderson, a financial analyst at the Pershing, N.J., division of Donaldson, Lufkin & Jenrette Securities Corp.

Welch's choice of Gary M. Reiner, GE's chief information officer, to orchestrate the program demonstrated the key role IT would play.

Subscriber drive backfires on AOL

By Mitch Wagner and Patrick Thibodeau

FACED WITH multiple class-action lawsuits from upset customers, America Online, Inc. last week detailed steps it will take to ease congestion on its network.

Ever since the company began offering unlimited access for $19.95 per month, customers have been complaining that they have been unable to access the service. An independent study found the service was inaccessible more than three quarters of the time during peak usage periods soon after the company started the unlimited-use pricing plan.

Calls to 24 AOL access points failed to connect 76% of the time during the period of 10 p.m. to 10:59 p.m., according to research conducted Dec. 23 to Jan. 2 by Inverse Network Technology, Inc. The figures showed AOL performance was nearly six times worse than the national average for Internet service providers.

"AOL has become absolutely dismal," said user Jean Achille, managing partner at The Devon Group, a management consultancy in Holmdel, N.J. "And as a small business, we just can't dial in anymore. It's particularly bad right after school, when the kids come home from school and they log in to the chat rooms right away."

America Online last week outlined several steps intended to ease network congestion — from spending more money on modems to scaling back efforts to attract members. Interestingly, America Online's move to curtail membership drives was announced on the same day it said membership had surpassed 8 million users.

The system improvement plan includes the following:

- Increasing investment in system capacity from the previously announced $250 million to $350 million.
- Increasing modem capacity by 75%. The company currently has 200,000 modems.
- The company will hire an additional 600 customer support representatives over the next six months, bringing the total to 4,500.

Come visit our Web site @Computerworld

- **TACKLING THE YEAR 2000 PROBLEM** Check out our new year 2000 page, where you'll find the most recent articles and features on the year 2000 date problem. (www.computerworld.com/year2000)
- **PAIN RELIEF** Telecommuters take heart. Computer industry writer Rochelle Garner shares firsthand insight on how to select ergonomically friendly equipment. (www.computerworld.com/careers)

Domain name deadbeats owe $21M to Internet fund

By Gary H. Anthes

A FUND SET UP 16 months ago for "the preservation and enhancement of the intellectual infrastructure of the Internet" is millions of dollars short because users have failed to pay fees for domain name registration.

The National Science Foundation (NSF) last week confirmed a report in *The Washington Post* that the fund was about $21 million in arrears.

Source: Internet Society, Herndon, Va.

And the NSF, which established the fund, has no idea what to do with the nearly $10 million it has.

Don Mitchell, a staff associate at the NSF, said some of the shortfall represents recent registrations by organizations that routinely stretch out payments 30 to 90 days.

"When we set this up, we didn't want to impede the growth of the Internet," Mitchell said. "So we continue to register first and pay later."

The funds are collected by Network Solutions, Inc. in Herndon, Va. The company runs the InterNIC Registry for North America and collects $100 for the registration of each Internet address of the type acme.com. Network Solutions pays 30% of the fees collected into the Internet improvement fund.

InterNIC is registering about 80,000 new domain names a month and, through November, $9.9 million has gone into the fund, according to the InterNIC World Wide Web site (rs.internic.net). But the funds that have been collected remain unused, because no one can agree on how to spend them.

Under terms of its agreement with the NSF, Network Solutions will devise a mechanism for spending the funds. But it has run into opposition over its role, Mitchell said. He said he expects the company to propose such a mechanism soon.

Support delays irk Oracle users

▸ No support yet for vendor's client/server applications with Oracle7.3 database

By Craig Stedman and Randy Weston

STAMP OF APPROVAL

Vendor	Application	Certification
Oracle	Oracle Applications 10	Q1 1997
SAP	R/3 3.01	Limited support now
PeopleSoft	PeopleSoft 5 PeopleSoft 6	June 1996 November 1996
Baan	Baan IVb	Q1 1997

ORACLE CORP. users are starting to chafe at the time it is taking the company to certify its client/server applications for use with the latest release of its database.

Oracle7.3 became available last February, but users who run their business on Oracle applications can't deploy the database because Oracle still hasn't given the thumbs-up sign to use the two products together. Meanwhile, rivals such as SAP AG and PeopleSoft, Inc. started clearing their applications for use with Oracle7.3 last year.

The database and applications have to be certified together before Oracle will support them.

But the long certification process on Oracle7.3 is forcing users to bide their time before they upgrade the database, which offers features such as Windows-based management.

PERFORMANCE BOOST

The Windows capability is a "huge" improvement over the character-based interface on earlier databases, and it could reduce the need to buy third-party administration tools, said Hugh Allan, manager of information technology at Dunlop Tire Co. in Amherst, N.Y. But Dunlop doesn't expect to upgrade most of its servers to Oracle7.3 until next summer, he said.

Oracle's upgrade process "is very restrictive, and that really impacts on us," Allan said. The close ties between Oracle's database and applications boost performance and cut Dunlop's tuning workload, "but there is a trade-off," he said.

In comparison, Allen said, Dunlop can usually just go to a new database at will with the Lawson Software, Inc. applications it also uses.

Cliff Godwin, vice president of applications technology at Oracle, acknowledged that the approval process for Oracle Applications 10 for use with Oracle7.3 has been "one of our longer certifications."

Godwin said the combination will be cleared for Sun Microsystems, Inc.'s Solaris operating system this week or next. Other Unix platforms should be cleared by March. "We could be more aggressive, but we don't want to just assume that upward compatibility is there," he said.

Oracle's conservative approach may help protect its customers from charging forward with applications that blow up on them. "But it is definitely a blockade to the users," said David McGoveran, president of Alternative Technologies, a consultancy in Boulder Creek, Calif.

Ron Hawkins, director of IT at Millipore Corp. in Bedford, Mass., is looking ahead to the Oracle8 database due to be released by midyear. But Hawkins said he doesn't expect to upgrade Millipore's 30 databases to Oracle7.3 until May.

More work, less golf helps Unisys IS cut costs

By Thomas Hoffman

WHEN JOHN CARROW was the city of Philadelphia's chief information officer last year, he fell seven rounds short of his goal of playing 25 rounds of golf.

As the new CIO at Unisys Corp., he'll probably spend even less time on the links. "I set the same goal this year, but I don't know if I'll be able to meet that," Carrow said.

IS PROJECTS

Unisys in Blue Bell, Pa., constantly seeks ways to cut costs. A current project was designed to consolidate its six global electronic-mail systems into two systems: Microsoft Corp.'s Exchange and Lotus Notes.

But the company still struggles to find revenue opportunities. "From an IT function, we don't necessarily generate revenues, but we can provide enablers so that the businesses can," said Carrow, who will oversee a 1,200-person information systems staff.

One of those enablers is an IS project to establish more electronic data interchange connections with key customers. That is expected to streamline the way Unisys customers gather information about equipment and services. Unisys also has rolled out an Oracle Corp.-based financial system to 130 of its 160 offices worldwide. By standardizing on a common reporting system, Unisys hopes to make its financial operations more efficient, Carrow said.

Unisys "is making progress, but it's torturously slow," said Michael J. Geran, an analyst at the Pershing Division of Donaldson, Lufkin & Jenrette Securities Corp. in Jersey City, N.J.

Domain name deadbeats owe $21M to Internet fund

By Gary H. Anthes

A TEN-MONTH-OLD 16 months ago for the preservation and enhancement of the intellectual infrastructure of the Internet is millions of dollars short because users have failed to pay fees for domain name registration.

The National Science Foundation (NSF) last week confirmed a report in *The Washington Post* that the fund was about $21 million in arrears.

Number of Internet hosts each year during January

1995	4.9M
1996	9.3M*
1997	17.8M*
1998	34M*
1999	65M*

*Projected

Source: Internet Society, Reston, Va.

And the NSF, which established the fund, has no idea what to do with the nearly $10 million it has.

Don Mitchell, a staff associate at the NSF, said some of the shortfall represents recent registrations for [illegible] that [illegible] started [illegible] months [illegible] days.

Which [illegible] he said, we don't want to impede the growth of the Internet, Mitchell said. "So we continue to register first and pay later."

The funds are collected by Network Solutions Inc. in Herndon, Va. The company runs the InterNIC Registry for North America and collects $100 for the registration of each Internet address of the type acme.com. Network Solutions pays 30% of the fees collected into the Internet Improvement Fund.

InterNIC is registering about 80,000 new domain names a month and through November $6.9 million has gone into the fund, according to the InterNIC World Wide Web site, its internet net. But the funds that have been collected remain unused because no one can agree on how to spend them.

Under terms of its agreement with the NSF, Network Solutions will devise a mechanism for spending the funds. But it has run into opposition over its role. Mitchell said. He said he expects the company to propose such a mechanism soon.

Support delays irk Oracle users

• No support yet for vendor's client/server applications with Oracle7.3 database

By Craig Stedman and Randy Weston

ORACLE CORP. users are starting to chafe at the time it is taking the company to certify its client/server applications for use with the latest release of its database.

Oracle7.3 became available last February, but users who run their business on Oracle applications can't deploy the database because Oracle still hasn't given the thumbs-up sign to use the two products together. Meanwhile, rivals such as SAP AG and PeopleSoft Inc. started clearing their applications for use with Oracle7.3 last year.

The database and applications have to be certified together before Oracle will support them.

But the long certification process on Oracle7.3 is forcing users to hide their time before they upgrade the database, which offers features such as Windows-based management.

STAMP OF APPROVAL

Certification of client/server applications for Oracle7.3

Vendor	Application	Certification date
Oracle	Oracle Applications 10	01/1997
SAP	R/3 3.0f	Limited support now
PeopleSoft	PeopleSoft 5 PeopleSoft 6	June 1996 November 1996
Baan	Baan IVb	01/1997

PERFORMANCE BOOST

The Windows capability is a "huge" improvement over the character-based interface on earlier databases, and it could reduce the need to buy third-party administration tools, said Hugh Allan, manager of information technology at Dunlop Tire Corp. in Amherst, N.Y. But Dunlop doesn't expect to upgrade most of its servers to Oracle7.3 until next summer, he said.

Oracle's upgrade process "is very restrictive and that really impacts us on us," Allan said. The close ties between Oracle's database and applications boost performance and cut Dunlop's running workload, "but there is a trade-off," he said.

In comparison, Allen said, Dunlop can usually just go to a new database at will with the Lawson Software, Inc. applications it also uses.

Cliff Godwin, vice president of applications technology at Oracle, acknowledged that the approval process for Oracle Applications 10 for use with Oracle7.3 "has been one of our longer certifications."

Godwin said the combination will be cleared for Sun Microsystems, Inc.'s Solaris operating system this week, in next Digital Unix platforms "should be cleared by March. "We could be more aggressive, but we don't want to just assume that upward compatibility is there," he said.

Oracle's conservative approach may help protect its customers from charging forward with applications that blow up on them. "But it is definitely a blockade to the users," said David McGovern, president of Alternative Technologies, a consultancy in Boulder Creek, Calif.

Ron Hawkins, director of IT at Millipore Corp. in Bedford, Mass., is looking ahead to the Oracle8 database due to be released by midyear. But Hawkins said he doesn't expect to upgrade Millipore's 30 databases to Oracle7 until May.

More work, less golf helps Unisys IS cut costs

By Thomas Hoffman

WHEN LOUIS CARROW was the city of Philadelphia's chief information officer last year, he fell seven rounds short of his goal of playing 25 rounds of golf.

As the new CIO at Unisys Corp., he'll probably spend even less time on the links. "I set the same goal this year, but I don't know if I'll be able to meet that," Carrow said.

IS PROJECTS

Unisys in Blue Bell, Pa., constantly seeks ways to cut costs. A current project was designed to consolidate its six global electronic-mail systems into two systems: Microsoft Corp.'s Exchange and Lotus Notes.

But the company still struggles to find revenue opportunities. "From an IT function, we don't necessarily generate revenues, but we can provide enablers so that the businesses can," said Carrow, who will oversee a 220-person information systems staff.

One of those enablers is an IS project to establish "more electronic data interchange connections with key customers." That is expected to streamline the way Unisys customers gather information about equipment and services. Unisys also has rolled out an Oracle Corp.-based financial system to 130 of its 160 offices worldwide. By standardizing on a common reporting system, Unisys hopes to make its financial operations more efficient, Carrow said.

Unisys "is making progress, but it's tormentously slow," said Michael J. Geran, an analyst at the Pershing Division of Donaldson, Lufkin & Jenrette Securities Corp. in Jersey City, N.J.

Century command central

What's the best way to organize your year 2000 conversion project? Build it around a central office that can act as coach, manager, motivator and cheerleader, information systems executives say.

Learn what Rick Hunter and Katherine Schrup (right) at Kaiser Permanente Northern California — and other IS managers — are doing to make their software millennium-compliant.

Managing, Page 69

In this issue

NEWS

6 **Management switcheroo**
NCR abandons Hewlett-Packard, recommends CA-Unicenter TNG to manage NCR hardware.

12 **Suite deal**
Corel licenses still-unproven Netscape suite to compete with Office 97.

14 **IBM builds Beboffolio**
Development tools that add depth to Web sites will debut at Lotusphere.

16 **Financial stability?**
In a turnaround effort, Appleouts $1.8 billion in cash, but it owes $1 billion, too.

20 **Merger madness**
Internetworking merger frenzy leaves users without knowledgeable sales reps.

OPINION

33 **Object objections**
Finding and maintaining reusable code isn't cost-effective, Martin A. Goetz warns.

33 **Chaotically mobile**
As they evolve, handheld devices will swamp IS like tribbles on the starship *Enterprise*, John Gantz predicts.

TECHNICAL SECTIONS

SERVERS & PCs

30 **Wanted: open storage**
Users seek storage systems to handle data from different brands of servers.

32 **NUMA scales Pyramid**
Pyramid unveils a scalable server that uses Non-Uniform Memory Access (NUMA) technology.

SOFTWARE

43 **Go directly to Java**
Direct database links make Java useful to businesses.

43 **Apple's core**
The strategy to support two operating systems turns off longtime users.

THE ENTERPRISE NETWORK

49 **Pull your disk together**
The old problem of disk fragmentation unexpectedly hits Windows NT users.

52 **War is hell?**
Not when it's switch price wars. IS wins as Ethernet port costs tumble.

THE INTERNET

57 **Setting rules**
Intranet managers establish standards to head off chaos among internal Web sites.

57 **Ready for action**
Toys no more — HTML editors become serious tools for electronic commerce.

CORPORATE STRATEGIES

67 **Medicaid strategy**
Maine implements decision-support system to track cases, cut waste.

67 **Get me rewrite**
Instead of seeking new workers, The Tribune Co. teaches staff Internet skills.

FEATURES

MANAGING

72 **Year 2000 scoreboard**
There are only 1,076 days left before 1/1/00. Are you ready?

76 **As the pendulum swings**
Innovation or discipline? IS' business managers are often displeased either way, columnist Peter G. W. Keen writes.

BUYER'S GUIDE

79 **Product reviews**
Windows 95 upgrade and Norton Utilities for Windows 95.

MARKETPLACE

98 **Putting the 'P' in PIM**
Personal information managers (PIM) get highly personal.

ETC

Company index	103
Editorial/Letters	32
F.Y.I.	76
How to contact CW/Subscriptions	103
Inside Lines	108
Stock Ticker	102

ARCHIVAL RIVALS
Boston's Computer Museum spreads out west, sparks feud over funds and exhibits.
In brief, page 83

Software pivotal to big iron renaissance

By Tim Ouellette

COME SEE the softer side of big iron.

Because mainframe hardware sales have rebounded in the past two years, users seek better software to leverage their mainframe investment and turn the machines into enterprise servers, not just heavy-lifting number crunchers. In fact, most observers see business software as the key to whether the hardware-based mainframe revival can be sustained.

The good news for mainframe shops is that more software vendors plan to port their PC or Unix applications to OS/390 — IBM's latest and greatest mainframe operating system — in the coming year

APPLICATIONS ON THE WAY

Heading the list are SAP AG's R/3 database server, due by midyear; Baan Co.'s Baan 4.0, due in the first half of the year; and J. D. Edwards & Co.'s OneWorld suite and Lotus Notes, both due in the second half of the year.

"With better applications, I think the mainframe will become a central server," said Douglas Mackie, vice president of megacenter operations at Zurich Insurance Group, Inc. in Schaumberg, Ill. "This will help mainframe use run well into the next century."

Recent research by Infoplex Corp. in Hayward, Calif., found that 11% of total mainframe processing power in data centers is being used for online serving in client/server applications rather than in the mainframe's batch processing mode.

Mainframe vendors such as IBM, Amdahl Corp. and Hitachi Data Systems Corp. have worked the past few years to make the hardware practically a commodity, with cheaper and easier-to-maintain air-cooled systems and parallel sysplex, a clustering architecture.

CUSTOMER DEMAND

Although the improvements give mainframes the muscle to test all the new code for year 2000 conversions and run existing applications, the future looks less rosy unless more applications hit the streets.

"Customers are putting far more emphasis on what software packages will run on the mainframe," said John Young, an analyst at the The Clipper Group, Inc. in Wellesley, Mass.

Because the mainframe already hosts so much of corporate America's data, bringing the applications home is seen as a way to simplify overall management. "A lot of data we work with is on the S/390 already. So running applications where the data already is makes sense," said John Bevis, president of Share, an IBM mainframe user group based in Chicago.

But not everyone is pushing code back to the mainframe. The trend has been to offload application development to Unix and Windows NT platforms.

"All new development for us is in client/server, though our bread-and-butter billing applications still remain on the mainframe," said Phil Orton, director of central operations at Entergy Corp. in New Orleans.

And although there has been a lot of movement among developers to the S/390 platform, it is nowhere near that of Windows NT, which will be the mainframe's greatest competitor, said Ed Carr, an analyst at Aberdeen Group, Inc. in Boston.

FASTER DATA WAREHOUSING

Got mountains of data in a dozen different formats that you need to select, reformat, aggregate, and sort? SyncSort™ is optimized to do the job—fast. Use it with more specialized warehousing tools to slash your processing time. To arrange a **free trial**, call us at (201) 930-8200. Or if you'd prefer more information first, we'll send you a copy of "Six Data Warehouse Tasks Made Easier with SyncSort™."

syncsort

Tel (201) 930-8200 dept. 17CWS
Fax (201) 930-8290 dept. 17CWS
http://www.syncsort.com

©1996 Syncsort Incorporated.

NCR pushes migration to Unicenter

By Jaikumar Vijayan

THESE ARE SOME unexpected migrations ahead for users of NCR Corp.'s systems and network-management platforms.

In a surprise announcement last week, NCR urged users to switch from Hewlett-Packard Co.'s OpenView to Computer Associates International, Inc.'s CA-Unicenter: The Next Generation (TNG).

OpenView management platform for NCR hardware, company officials said.

Previously, NCR relied on OpenView, a smattering of other management products and its own Operations Advantage package to help customers manage their systems.

NCR said it will work with CA to migrate users of these platforms to CA-Unicenter TNG. But the company will continue to support customers who want to continue with their existing management environment, NCR officials said.

NCR BACKS CA-UNICENTER

What's the deal: NCR will sell CA-Unicenter software for all its platforms. It will no longer sell HP OpenView.

What it means: Those using OpenView and NCR's management software will be migrated to CA-Unicenter.

What's in the future: CA will integrate support for NCR's LifeKeeper clustering software, TopEnd middleware and NCR's TeraData database in CA-Unicenter.

This could result in some painful and complicated migrations for customers, analysts said. But analysts also believe that the actual number of such NCR users is fairly small.

NCR in Dayton, Ohio, has entered into an agreement with CA under which NCR will sell CA-Unicenter TNG as the management platform of choice for all NCR hardware. NCR will no longer sell or recommend HP's

WORTHWHILE MOVE

"It is going to be a little painful for us to migrate all our stuff over to Unicenter. But in the end, I think it is going to be worth it," said Roy Dodd, director of information systems at The Good Guys, a consumer electronic retailer based in Brisbane, Calif.

CA-Unicenter now manages the company's mainframe and seven minicomputers. With this announcement, Good Guys will migrate its 80 NCR servers to the same management platform, Dodd said.

CA-Unicenter's support for Windows NT also ties in closely with NCR's Windows NT-centric strategy, analysts said.

"The reason this announcement was made is that OpenView seems to have been slow to get over to the NT platform," said Brandon Musler, an analyst at Illuminata, Inc. in Nashua, N.H.

HP's enterprise edition of OpenView for Windows NT was due last fall but may not be ready until next quarter.

"To that extent, this alliance is going to be useful for NCR users following NT," said Brian Murphy, an analyst at The Yankee Group in Boston.

As part of the deal, CA will acquire and integrate selected Operations Advantage products and technologies from NCR. Future versions of CA-Unicenter 1.5 and CA-Unicenter TNG will include support for NCR's LifeKeeper clustering software, TopEnd middleware and TeraData database.

TRADING PLACES

	1996	1997	1998
Pentium	1.07M	800,000	294,000
Pentium Pro	72,000	736,000	1.7M

Source: International Data Corp., Framingham, Mass.

Compaq goes Pentium Pro

By April Jacobs

COMPAQ COMPUTER CORP. is betting big on Intel Corp.'s Pentium Pro, and the rest of the server pack may not be far behind.

The industry's top PC maker last week revealed it will expand its ProLiant and ProSignia Pentium Pro-based servers at the expense of a line of Pentium-based machines introduced a little more than a year ago.

The Houston-based company said its Pentium Pro-based servers will give users more room to grow. They will come bundled with more management software, making them cheaper to maintain and faster.

"We would expect that on the server side, most vendors will phase out the Pentium by the end of 1997," said Susan Frankle, an analyst at International Data Corp. in Framingham, Mass.

She said phasing out Pentium-based machines for servers makes sense and predicted that the timing of the shift will depend on how quickly Intel moves to reduce Pentium Pro pricing, which will narrow the price gap between Pentium and Pentium Pro machines.

SOUND STRATEGY

Users also said the strategy is sound, and many have already moved to Pentium Pro-based machines.

Frank Delargy, information systems manager at Waltham, Mass.-based Polaroid Corp., said he wouldn't consider buying Pentium-based machines, because they aren't suited for the Windows NT environment. He recently purchased Pentium Pro servers.

"NT Server 4.0 was written for Pentium Pro and works well as an infrastructure for our NT environment," Delargy said.

Users can upgrade their Pentium-based Compaq servers, such as its ProLiant 1500, by swapping in new boards, the company said.

Still, there is a price differential to consider. Machines with Pentium Pro chips cost about 20% more than their older siblings, Frankle said.

Dell Computer Corp. in Round Rock, Texas, is also leaning toward Pentium Pro machines. The company last year introduced the PowerEdge 2100, a uniprocessor Pentium Pro server, and the PowerEdge 4100, a dual-Pentium Pro server. Those models replaced the Pentium-based PowerEdge XE, SP and EL models.

Dell is also gearing up to announce the PowerEdge 6100, a quadprocessor server, at the end of the month.

Hewlett-Packard Co. said it is also migrating to the Pentium Pro, but only on its higher-end server lines. Low-end servers will still run on the Pentium chip for now.

BUNDLED SOFTWARE

Compaq's new ProLiant 800 will feature 180-MHz or 200-MHz Pentium Pro processors and beefed-up server management software. It will serve as an upgrade to the company's ProSignia 300.

Compaq is bundling its Integration Server software, which allows network managers to configure a single server and replicate that configuration across multiple servers, with the ProLiant 800. Also standard are Insight Manager management software and SmartStart, which helps with server configuration issues.

Pricing and availability will be announced this week.

GARTNER GROUP REPORT

Network computers can save 41% over PCs

By Stewart Deck

DEPENDING ON the class of network computer they purchase, users can expect to save 26% to 41% vs. the cost of a typical networked, Windows 95-based workstation environment.

This and other findings will be detailed this week when Gartner Group, Inc. releases its study, "Network Computers: Total Cost of Ownership."

The report attempts to bring some organization to the discussion of network computers. It separates available products from future products, breaks the hardware into classes and compares the cost savings possible from each class.

TRIO OF CLASSES

The following three classes of network computers are in the report:

- **NC-S.** These are server-centric network computers that execute application code at the server level. The total cost-of-ownership savings over a five-year life cycle is estimated at 33% savings.
- **NC-C.** These are client-centric network computers that execute applications at the desktop. Companies that purchase the NC-C models should save approximately 41% over today's standard networked PC model.
- **NetPC.** This is a planned, diskless Windows box with only a handful of hardware specifications to its name. For those willing to wait for the NetPC, the study predicts that the cost-of-ownership savings will come to about only 26%.

Some NC-S models are available now. Examples include HDS Network Systems, Inc.'s @workStation, Wyse Technology, Inc.'s Winterm series and Network Computer Devices, Inc.'s Explora. If a company is going to roll out a network computer to its workforce this year, it will be an NC-S.

NC-C models include the Java-based models such as IBM's Network Station, Sun Microsystems, Inc.'s JavaStation and others such as models from Acorn Computer Group Ltd. that license software from Oracle Corp.'s Network Computing subsidiary. The study predicts these machines will become a factor in the NC marketplace in 1998.

The NetPC will be based on hardware specifications put forward by Microsoft Corp. and Intel Corp. Although NetPC hardware platforms may become available this year, the crux of the NetPC — the software — won't be available until at least the middle of next year.

Some industry analysts said they see this specification as a way for Microsoft and Intel to stall migration or purchases of network computers by spreading fear and uncertainty throughout an uneducated market.

Correction

Due to a reporting error in the Dec. 23/Jan. 6 issue of *Computerworld* (page 8), Barry Adam, the director of information services at The Disney Store in Glendale, Calif., was misquoted. The story should have stated that Disney merchandise received at the store's distribution center is "cross-docked" from the receiving docks to the outbound shipping docks.

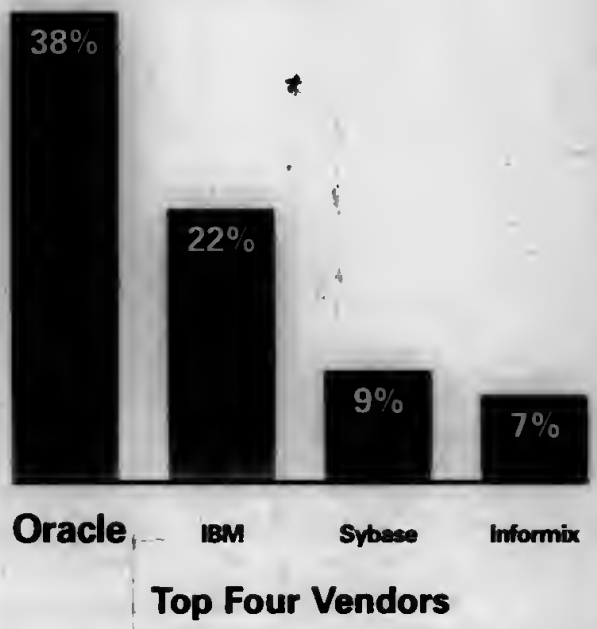
Oracle7
#1 For Data Warehousing

#1 Readers' Choice

Databased Advisor names Oracle7 #1 for data warehousing.

#1 Customer Choice

IDC names Oracle #1 in the worldwide data warehousing market.



Oracle7 has more features for data warehousing than any other RDBMS: parallel query, index and load; bit-mapped indexes; star queries; OLAP integration; and scalability across a range of SMP and MPP systems. It's no wonder that more organizations rely on Oracle, from their largest data warehouses to their smallest data marts. And, it's why more application developers build their data warehouse solutions on Oracle7. So, if fast, accurate decisions are important to your company's performance, call Oracle at 1-800-633-1071, ext. 10345, or find us on the Web at http://www.oracle.com

ORACLE®

Enabling the Information Age ™

©1997 Oracle Corporation. Oracle is a registered trademark, and Oracle7 and Enabling the Information Age are trademarks of Oracle Corporation. All rights reserved. All other company and product names are the trademarks of their respective owners. *Databased Advisor* July 1996. Source: IDC, Data Warehouse Management Market, 1996

GMAC takes Fast Ethernet route to multimedia intranet

By Justin Hibbard

NIRAJ PATEL knows an opportunity when he sees one.

The chief technology officer at GMAC Commercial Mortgage Corp. saw the stars align last year when the growing company decided to move to a bigger campus in Horsham, Pa.

Patel had long wanted to roll out multimedia applications on the company's intranet and open parts of the network to outside customers. But GMAC's aging 16M bit/sec. shared Token-Ring LAN couldn't support the load. So when management committed to relocating, Patel issued a request for proposals for a new network.

NETWORKING PROFILE

"We looked at [Asynchronous Transfer Mode] to the desktop and 100Base-T shared switched," Patel said. "It basically came down to saying, 'What's the best price/performance we're looking for?'"

The answer was a 100M bit/sec. Fast Ethernet backbone connected to 25 Fast Ethernet hubs that deliver dedicated 100M bit/sec. service to users' desktops.

GMAC Commercial Mortgage and sister company GMAC Mortgage Corp. leased the entire package from 3Com Corp. in a $1.3 million deal that gives GMAC the option to buy it for $1 after three years.

The increased bandwidth allowed Patel to begin building an extranet — a portion of the company's intranet that outside customers can access — without worrying about congestion from the added traffic.

Dubbed Investor Query, the service will let investors log in to GMAC's intranet through a World Wide Web page.

"This will allow all our investors to go through the Internet and get loan-level detail on all the loans we service for them as well as occupancy rates, inspections and pictures of the properties," Patel said.

Investors will be able to request a property inspection by filling out an electronic form, which will be routed to GMAC's inspection contractors. After the inspection, the contractors will be able to log in to GMAC's intranet to report their findings in a form and upload digital photos. Investors will have access to the inspection results as soon as they are posted.

"Right now, using the paper system takes a week to file an inspection to investors. We're hoping this new process will take two days or less," Patel said.

"It would be enormously helpful to investors," said Deborah Seife, director at Fitch Investors Service LP, a mortgage securities credit rating firm in New York. "What underlies these transactions are these properties. The ability to have some feel for the quality of the properties is important."

Outside customers aren't the only ones who will benefit from GMAC's extra bandwidth. Employees will gain access to videotaped training and television broadcasts transmitted across the network by Starlight Networks, Inc.'s StarWorks media server.

"We looked at ATM to the desktop and 100Base-T shared switched," says GMAC's Niraj Patel. "It came down to saying, 'what's the best price/performance we're looking for?'"

"With our growth rates, we could never get people to take time off to get trained," Patel said. "Now we can say, 'When you have time, take five minutes here, five there.'"

Harry Fenik, an analyst at Zona Research, Inc. in Redwood City, Calif., said few companies have upgraded to 100M bit/sec. networks because of the high cost of installing new network interface cards on every desktop.

But GMAC's situation was unique in that the relocation provided an opportunity to upgrade.

SHORTS

FAA upgrades Chicago radar

The Federal Aviation Administration last week turned on a new radar data processor at the Chicago Air Route Traffic Control Center. Outmoded computers for radar systems account for 87% of the unscheduled downtime at the nation's busiest air traffic control centers, the FAA said. The new Chicago system, a pair of IBM ES 9221 Model 170s, replaces an early-1970s IBM computer that was down 333 hours last year. Similar upgrades are scheduled this year at airports that serve New York, Cleveland, Washington and Fort Worth, Texas.

Compaq gets into leasing

PC maker Compaq Computer Corp., trying to be more like the big systems vendors, plans to get into the computer leasing and financing business later this year. Compaq named Irving Rothman president of the venture, called Compaq Capital Corp. Rothman came from AT&T Capital and AT&T Credit Corp.

Apache posts security fixes

The Apache HTTP Server Project last week posted to its World Wide Web site patches for two security holes recently discovered in its Apache 1.1.1 Web server. One of the holes could allow intruders to gain access to files on servers. The other hole could let unauthorized users view the contents of a Web server directory. The server and the patches are available for free at www.apache.org.

Data warehouse training

Migration Software Systems Ltd. in San Jose, Calif., and Global Knowledge Network, Inc. in Waltham, Mass., are teaming up to fill a big gap in the data warehousing field: training. The companies this spring will begin offering a five-day course in which users build a data warehouse using multiple vendors' extraction, modeling and query tools. Cost of the courses taught at users' sites will range from $2,200 to $2,500.

HP bundles database

Hewlett-Packard Co. officials said the company will bundle Informix Software, Inc.'s new Universal Server database with high-end models of its Domain Enterprise servers for Web applications. The Domain XE packages that will include the Informix database are scheduled to ship next summer. HP also will integrate other Web-related software from Informix, including its Universal Web Connect middleware.

Web group backs HTML 3.2

The World Wide Web Consortium last week endorsed the Hypertext Markup Language (HTML) 3.2 specification, which it developed last year with several vendors. The specification adds features such as tables, applets, text flow around images, superscripts and subscripts. It is also backward-compatible with the current standard, HTML 2.0. The specification must be approved by the Internet Engineering Task Force to become a standard.

Internet spec for banks due

Microsoft Corp., Intuit, Inc. and CheckFree Corp. have announced plans to create a single, unified technical specification that would allow financial institutions to exchange financial data with customers over the Internet. A draft of the Open Financial Exchange is available this week at the vendors' Web sites. A final version of the specification will be published in mid-February.

EARNINGS WRAP-UP Intel Corp. racked up revenue of $20.8 billion and earnings of $5.2 billion last year. Fourth-quarter earnings were $1.9 billion on revenue of $6.4 billion. ... Digital Equipment Corp. eked out a $32 million profit on revenue of $3.36 billion for its second quarter, ended Dec. 28. ... Sun Microsystems, Inc.'s earnings jumped 41% to $178.3 million on revenue of $2.08 billion for the quarter ended Dec. 29. ... NetFrame Systems, Inc. said it expects to report an operating loss for the quarter ended Dec. 28. ... Chip vendor Advanced Micro Devices, Inc. reported a net loss of $21.2 million for its fourth quarter.

Get Started Today With Micro Focus Revolve/2000

Now you can stop your century date change problem in its tracks. And there's only one set of tools that lets you do it yourself.

Micro Focus Revolve®/2000 provides all the tools you need to quickly and efficiently identify and fix your date problems across an entire system — all from within a single window on your PC. Then, you can compile and test changes back on the mainframe, or use Micro Focus COBOL Workbench® and other Micro Focus tools to test those systems on the PC before sending them back up to your mainframe for production.

You can even choose to use Micro Focus' Challenge 2000 Consulting Services for project management expertise and expert training courses—all scaled to meet your individual needs.

You know us. As the 20-year leader in tools and services for developing and maintaining legacy systems, Micro Focus isn't about to let you get trampled by this oncoming problem. Let's head it off together right now.

Call Micro Focus today at 1-800-632-6265 and ask for your free Revolve/2000 demo disk or visit us at: http://www.microfocus.com/cw

Transforming Enterprise Systems **MICRO FOCUS®**

©1996 Micro Focus Ltd. Micro Focus and COBOL Workbench are registered trademarks. Revolve is a registered trademark of Burl Software.

Tools peer inside client/server apps

▸ *Rmon 2 standards are approved; first wave of products hits market*

By Patrick Dryden

REMOTE MONITORING (Rmon) standards were approved last week that pave the way for tools that give managers a clearer view of what is happening inside client/server applications.

The first wave of compatible products hits the market this week with the introduction of software that monitors data collectors from multiple vendors.

Concord Communications, Inc. is launching an automated performance analyzer called Traffic Accountant, which can seek and interpret data supplied by compatible devices from 3Com Corp., Bay Networks, Inc., Frontier Software Development, Inc. and Hewlett-Packard Co.

And International Network Services, Inc. in Sunnyvale, Calif., opens up its World Wide Web-based performance monitoring service to support hardware from many vendors.

For the past two years, information systems managers could get reports about traffic at the application level only when hardware and software were provided by the same vendor.

But the enhanced remote network monitoring specification — Rmon 2 — approved by the Internet Engineering Task Force, promises a standard way to gather much of the same information.

"For a long time, we've wanted to see what applications run across our network and where users go on the Web, but we could never get inside the client/server transactions," said Joe Askins, director of data communications at Arizona State University (ASU) in Tempe.

ASU managers recently used Traffic Accountant to tap in to diverse sources on their network to track performance and usage. They upgraded the management modules inside Bay Networks hubs and the firmware for stand-alone probes from Concord.

"For a long time ... we could never get inside the client/server transactions."

– Joe Askins, Arizona State University

"The beta paid off: We've already reduced our overall daytime Internet utilization the equivalent of two T1 connections," Askins said.

For another beta tester, before-and-after utilization graphs helped justify purchases of network upgrades.

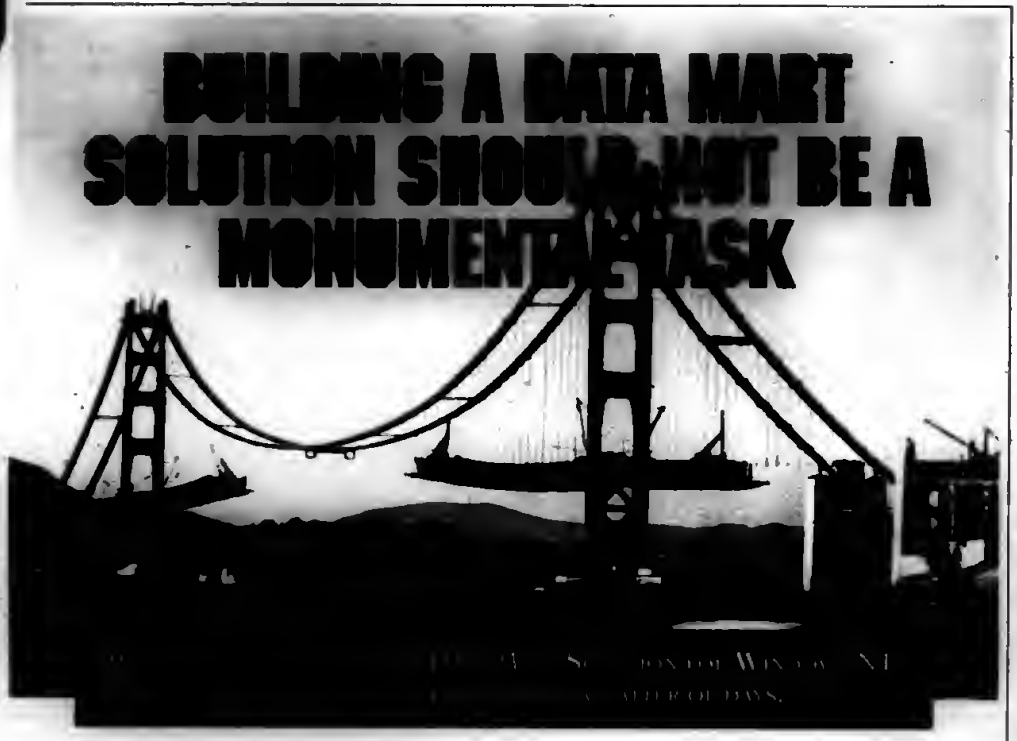
"After installing new equipment, we could show the resulting bandwidth improvements, so the finance folks can't roll their eyes," said Ric Paluch, a senior telecommunications network analyst at Frontier Corp. in Rochester, N.Y.

But some observers see a slow start for standards-based application monitoring because Rmon 2 has gained only "modest acceptance so far," said Bob Sakakeeny, an analyst at Aberdeen Group, Inc. in Boston.

Right now, only Bay Networks and Concord can supply the upgrades needed to support Traffic Accountant, which ships this week for $15,000.

Other vendors should ship compatible gear — new stand-alone probes and modules that fit inside internetworking devices — by April, according to officials at Concord in Marlboro, Mass.

Probes and embedded modules not only must support the Rmon 2 data formats, but they also require more power and memory to do so. That means buyers must budget for new probes and upgrades.



Now the road to instant information, rapid data mart development and deployment, and easier-to-use end-user tools is here. Introducing the Sagent™ Data Mart Solution, the high-performance solution that gives you information access at speeds quick enough to satisfy your organization's most demanding users.

Sagent delivers the first 32-bit, multi-tiered, multi-threaded architecture designed specifically for Windows 95 and Windows NT client/server systems. It's designed to run tasks in parallel and cache frequently requested data, speeding np response times even more.

Thanks to a complete set of tools, the process of populating your data mart is easily automated, whether you are moving data from an OLTP system or corporate data warehouse. In addition, end users can easily build powerful ioformation requests by dragging and dropping business terms and icons on the desktop. And Sagent provides workgroup collaboration so end users can actively share information with each other.

To demonstrate Sagent's powerful Data Mart technology, we invite you to accept the Sagent Challenge:

SAGENT WILL BUILD A FULLY FUNCTIONAL DATA MART PROTOTYPE AT YOUR SITE IN TWO DAYS.

Call us at 1-800-897-5160, extension 1010, to find out how your company can qualify for the Sagent Challenge, or for more information on the Sagent Data Mart Solution. See just how fast you can get business critical data into the hands of those who need it.

SAGENT

YOUR DATA MART SOLUTION FOR WINDOWS NT®

© Sagent Technology, Inc., 1996. Sagent and the Sagent logo are trademarks of Sagent Technology, Inc. Windows NT and Windows 95 are registered trademarks of Microsoft® Corporation. The Sagent Challenge Program is open to a limited number of qualified participants who are able to meet a pre-determined set of criteria. Only qualified sites may participate in the program. Call 1-800-897-5160 extension 1010, for qualifying information.

Oracle vs Informix

The key feature of a universal database servet is the ability to manage any type of data - tables, text, audio, video, etc. The key question is: if a large number of datatypes are not supported natively by the Universal Server, how easy and safe is it to extend that server with new datatypes?

	Oracle Universal Server	Informix Universal Server
Tables	**Native Support**	**Native Support**
Text	**Native Support**	**Third Party Datablade**
Audio	**Native Support**	**Third Party Datablade**
Video	**Native Support**	**Third Party Datablade**
Spatial	**Native Support**	**Third Party Datablade**

Oracle® Universal Servet® has powerful native support for most every datatype. In contrast, Informix requires you to program or buy thitd party developed datatypes that they call datablades. Amazingly, a mistake in the datablade code can "shut down the entire server" and may cause you to lose all your data, according to Michael Stonebraker, Chief Technology Officet at Informix*. What? Are you kidding?

So if you're a gambler, call the Informix datablade casino in Vegas—1-800-GOOD-LUCK. Or, if you want to manage all types of data and keep it safe, call Oracle at 1-800-633-1071, ext. 11118, or find us on the Web at http://www.oracle.com

ORACLE®

Enabling the Information Age™

© 1997 Oracle Corporation. All rights reserved. Oracle and Oracle Universal Server are registered trademarks and Enabling the Information Age is a trademark of Oracle Corporation. All other company and product names are the trademarks of their respective owners. *Computerworld, October 24, 1996

Office 97 makes official debut

By Lisa Picarille

AT A SOMEWHAT anticlimactic announcement, Microsoft Corp. last week formally rolled out Office 97, the long-anticipated and much-publicized major upgrade to the industry's best-selling productivity suite.

Office 97 is jam-packed with new features that include Outlook, a desktop information manager; tools for accessing, publishing and importing data from the World Wide Web; features that facilitate sharing and collaboration of documents; and a new graphical interface shared by all the applications.

New applications in the suite include an advanced drawing program designed to compete with CorelDraw, which Corel Corp. has included in its Office Professional 7 suite since it was introduced last spring.

Office 97 also features a few "gotchas" that have some users reluctant to upgrade. Some users have criticized the suite's memory requirements. Microsoft recommends 8M bytes per application, but users say the requirements are even higher.

And then there is the issue of backward compatibility with Office 95. "We are not planning to roll out Office 97," said Ralph Marshall, manager of technology deployment at US Air's information services department in Winston-Salem, N.C., where more than 4,000 users use Office 95. "You can't exchange files easily. I don't need those headaches, so we are sticking with Office 95."

Those issues, along with Microsoft's licensing program that could have corporate users paying up to 10% more than current prices on volume licenses, have analysts predicting a slow sales climb for Office 97.

SOME SUPPORT

Still, the suite has won some praise. Reinaldo Moodey, a design engineer at AT&T Solutions in Filerham Park, N.J., said he plans to move 450 users to Office 97. He said one benefit of the suite is the ability to draw tables easily. "Now, I spend a lot of time creating tables. I have to go through four or five steps. This takes a lot of that out."

But Moodey cautioned that Office 97 won't benefit Windows 3.1 users because it runs only on Windows 95 or NT — upgrades most Windows users haven't undertaken. "When you're looking at this, you're looking at [a product for] more sophisticated users."

Even the most savvy users may need some help, despite Microsoft's efforts to consolidate all its help features into a single place — an animated Office Assistant that steps users through processes.

Microsoft has taken some features that were in Office 95, which came out when Microsoft delivered Windows 95, and tried to make them more accessible. However, users are still slightly overwhelmed.

"It's easier to use, but it has richer functionality. You need to learn how to apply that," Moodey said.

Analysts agreed that Office 97 is an important and technologically advanced product, but "none of that changes the reality of the business upgrade cycle," said Dan Lavin, an analyst at Dataquest in San Jose, Calif. "Businesses upgrade their suites every couple of years — not every year. So unless companies are at the point in their cycles that they are ready to upgrade, they are likely to let this pass."

Still, Lavin said he expects Office 97 to further increase Microsoft's dominant share of the suites market, which ranges between 85% and 90%.

Sections editor Kevin Fogarty contributed to this story.

Is Office 97 open to infection?

Security issues popped up Thursday at the International Virus Prevention Conference '97 in Arlington, Va.

Tim Lebel, Microsoft's product manager for Office, told attendees that Office 97's Word will automatically convert previous Windows 95 Word macros into Office 97's new Visual Basic for Applications macro format. This sparked concern that macro-based viruses could also be converted before specific Office 97 antivirus tools are developed. Microsoft has incorporated code into Office 97 to prevent about 10 of the most popular macro-based viruses, such as Concept, from being converted. But otherwise, there is no built-in macro virus protection in Office 97. In a rather heated session, several antivirus software developers complained they weren't given adequate technical data from Microsoft to create tools for Office 97 before the product shipped. "I know we haven't provided enough information to date," Lebel said. "I really want to get this [relationship] fixed." — Sharon Machlis

Corel snags Netscape client suite

By Justin Hibbard

CORSL CORP. last week said it has licensed Netscape Communications Corp.'s Communicator client suite and will work with Netscape to integrate Communicator into Corel productivity suites.

Ottawa-based Corel said it will put Netscape's Communicator in its WordPerfect Suite 8 and Corel Office Professional 8, both due later this year.

Corel and Netscape said Communicator will share an electronic-mail address book with other applications in the Corel suites. Communicator will also be able to translate WordPerfect documents into Hypertext Markup Language documents.

Communicator will give Corel's suites an all-in-one desktop organizer much like Microsoft Corp.'s Outlook, which brings together E-mail, calendaring and documents in Microsoft's Office 97, the vendors said. Communicator can communicate with any mail server that supports Internet Mail Access Protocol 4 or Post Office Protocol 3.

LOTS TO PROVE

But Dan Lavin, an analyst at Dataquest in San Jose, Calif., said Netscape still has to prove Communicator will work as it claims.

Lavin said Outlook has hooks that will let users configure it to exchange messages with Lotus Development Corp.'s CC:Mail. Users also may deploy Outlook without its E-mail features and still find it useful, he said.

Users said Communicator will enhance Corel's suites but won't shake up their information systems strategies.

Mike Donnely, IS director at Rogers & Wells, said his law firm uses Corel WordPerfect Suite 7 and that Communicator will make a nice addition to Version 8. But it won't change the New York firm's business practices, he said. The company already uses Novell, Inc.'s GroupWise for collaboration and messaging.

Steven Meyers, information resource manager at a large state agency in Texas, said he couldn't justify using Communicator for groupware because his organization has built an infrastructure around GroupWise. "We have a tremendous investment in GroupWise, and it provides all the functionality of Communicator," Meyers said.

But organizations that don't use proprietary groupware "would probably get a big cost savings" by using Communicator instead, Meyers said. Most proprietary groupware requires each remote site to buy and administer extra server hardware — something unnecessary when using groupware based on Internet standards, Meyers said.

Still, Lavin said Mountain View, Calif.-based Netscape faces an uphill fight in the groupware market, and it will take time for the Corel deal to have any impact.

McAfee

CONTINUED FROM PAGE 1

could also be a first baby-step in a transformation of the software industry.

Someday, all software updates might be distributed online in background mode, using "push" technology such as BackWeb's.

John Anderson, vice president of telecommunications and computing services at American President Lines in Oakland, Calif., said the push channel could be very useful, but it also could be hazardous.

"You could come in and have 200 machines sitting in your office — and none of them work" if there were a glitch in the automatic software updates, Anderson said. "It'd have to be pretty bulletproof before we and other major companies would turn that loose."

BETA TEST

McAfee, in Santa Clara, Calif., today plans to launch a beta test of the channel for small-office and home users of the software. Large corporate users will get access Feb. 28.

The distribution method is scheduled to become generally available next month.

BackWeb makes tools for building push-oriented delivery systems, so named because they push information out to user desktops rather than waiting for users to find it at a World Wide Web site.

Other push technology vendors include Marimba, Inc. and PointCast, Inc.

The BackWeb technology can distribute any information, including text files, multimedia files, database updates, software and PowerPoint presentations, said Kelsey Selander, vice president of marketing at BackWeb.

In the McAfee deal, the distribution channel will carry a key component of antivirus software: the "signature files" for new viruses.

VIRUS SQUADS

McAfee, like most antivirus vendors, hires teams of programmers who analyze computer viruses as they are discovered, looking for unique characteristics to identify each virus.

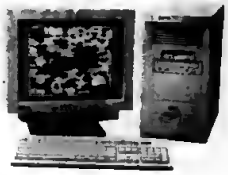
These "signatures" are aggregated into files, which are distributed regularly via disk, online services and McAfee's Web site.

McAfee will send virus software updates over the Internet

Monkey on your back #28: How to turn your PCs into real Windows NT® clients without really turning your PC users off.

intel inside PENTIUM PRO PROCESSOR

What used to be a big issue is now a non-issue. Because instead of trying to force a PC into being a Windows NT® enterprise client, you can get one that was born that way: Digital's new Celebris™GL. It comes enterprise-ready – complete with integrated networking, support for Digital Clusters for Windows NT, plus system management tools like ClientWORKS.™ Add Digital's Easy Network Set-Up and our unique tool-less enclosure designed for easy service and support, and your users are in for quite a turn-on. The new Windows NT-optimized Celebris GL. For your nearest reseller, call 1-800-DIGITAL, or visit www.windows.digital.com.



Celebris GL

10 Base-T/10 Base-2 upgradable to 100 Base-T via a daughter card.

Pentium® Pro processors 180 and 200 MHz.

Uniquely designed enclosure easy to service and support

digital™

WHATEVER IT TAKES™

© Digital Equipment Corporation 1997. Digital, the Digital logo, Celebris, and ClientWORKS are trademarks and Whatever It Takes is a service mark of Digital Equipment Corporation. Pentium and the Intel Inside Pentium Pro Processor logo are registered trademarks of the Intel Corporation. Windows NT is a registered trademark of Microsoft in the U.S. and other countries.

LOTUSPHERE

DataBolts aim to drag surfers to Web sites

By Mitch Wagner

AT NEXT WEEK'S Lotusphere 97, IBM plans to introduce software designed to give developers a drag-and-drop interface for building applications to run on the World Wide Web.

The DataBolts technology will let developers add a searchable library of documents to their Web sites.

'NET APPS

The Query & Retrieval DataBolt gives visitors access to documents on business, science and industry-specific information.

The DataBolt will give users more reasons to stay at a site, rather than force them to go to another Web site to pick up that information, said Jeffrey Kay, a software architect at IBM.

NEWS AND COMMERCE

Other DataBolts will include the Profiler, to allow developers to customize views of the content of a Web site based on user preferences; NewsTicker, which provides scrolling, real-time news; and Cryptolopes, IBM's bid to standardize technology for selling information and software over the Internet.

Cryptolopes is different from other sales methods because media-independent files that are "packed" using Cryptolopes can be distributed over the Internet, electronic mail, CD-ROM, diskette or any other medium.

And the buyer doesn't have to give a credit-card number to the seller or transfer the number over the Internet; IBM acts as middleman in the transaction.

DATABOLTS BY THE DOZEN

IBM plans to roll out about 60 different DataBolts by June. Each DataBolt will be represented by an icon on a palette in a development tool kit.

To add specific functionality to a site, the developer drags the icon for that DataBolt to the workspace portion of the tool set and then customizes the DataBolt as needed.

DataBolts are built using Java Beans or ActiveX, so they will run on multiple platforms, including Microsoft's Windows 95 and NT, IBM's OS/2, common Unix variants such as IBM's AIX, and Apple Computer, Inc.'s Macintosh.

Lotus tears pages from its Notespad

By Barb Cole

AT ITS ANNUAL USER conference next week, Lotus development Corp. plans a spate of announcements that are aimed at further breaking up its once monolithic Notes clients and servers.

Lotus will take time at Lotusphere 97 to detail Mad Dog, a strategy that includes a series of clients that range from the full Notes client to a Java-enhanced browser.

The company also will offer a new client, Notes Internet Mail, that is based on the existing Notes Mail client and adds integrated calendaring, scheduling and task management. The company also will take the wraps off a set of Java-enabled components that add charting, drawing, file viewing, spreadsheet and comment capabilities to Notes clients or browsers.

MICROSOFT CHALLENGE

With its new Internet Mail client, Lotus is targeting Microsoft Corp.'s Outlook, the next-generation client for Microsoft Exchange that offers similar capabilities. Outlook will appear in the Office 97 application suite and Exchange 5.0.

Kevin Coleman, a Notes administrator at Joseph E. Seagram & Sons, Inc. in New York, said he may reconsider deploying Notes Mail to the company's 600 Notes users now that he knows about the Notes Internet Mail client. "Something like this sounds interesting and may be better for us," he said.

The attraction for users is an integrated desktop client that goes beyond the basic mail inbox that browsers provide.

The lack of such an offering from Lotus has already driven some users toward Microsoft.

"We run Notes on the back end but will probably move to Outlook when we install Office 97 at our site," said Patrick MacNamara, worldwide manager of messaging at EMI Music in New York. MacNamara said the move wouldn't save EMI money but "would simplify the desktop."

Besides its client plans, Lotus will advance other key initiatives at the user meeting. The company will roll out an application for its Domino server, called Domino.connect, that will let users link to other databases.

Lotus also is expected to preview CC:Mail 8, a World Wide Web-enabled version of its LAN-based mail system, and Version 2.n of its NotesPump tool with support for Novell, Inc.'s Novell Directory Services.

DEBUTING AT LOTUSPHERE

Product	Description
Six new Java components	Applets that may be dropped into browsers or Notes clients, including draw, file viewing, spreadsheet and note taking
Notes Internet Mail client	New client for Domino and Notes that will integrate mail and calendaring functions in one interface
CC:Mail 8	Upgrade of LAN-based E-mail package with Web hooks
Domino.connect	An add-on to Domino for linking up with database applications
NotesPump 2.0	A data extraction tool that will gain additional directory synchronization capabilities

& Microsoft Outlook users see small Internet E-mail improvements. Page 57

Domino server getting document management add-on

Lotus next month will follow up its flurry of Lotusphere announcements by introducing a document management add-on for its Domino server, sources said.

Domino Document Manager is an application that allows the Domino messaging and Web server to manage shared documents that may be changed by multiple users.

Notes has long been a repository of documents within companies.

But it lacked some key capabilities, such as the ability to check documents in and out or store the pieces of a document in their native file formats.

Besides improving the document-handling capabilities of Domino, sources said, Domino Document Manager will keep the contents of Web servers up-to-date and weed out unnecessary documents.

The application is expected to roll out by year's end.

— Barb Cole

Web-based groupware takes on Notes attributes

By Barb Cole

A PIONEER in the World Wide Web-based groupware market is about to make its product a lot more like Lotus Notes.

Radnet, Inc., which sells WebShare groupware tools, last week announced it is enhancing its software with replication, a full-blown application builder and enhanced security. Those are the very features that helped to make Lotus Development Corp.'s Notes so popular.

"Replication has been a tough nut to crack, so if [WebShare] can do it, that's fantastic," said Robert Blau, director of electronic publishing services at Simon & Schuster, Inc. in Old Tappan, N.J. The publisher has deployed a WebShare-based sales force automation application to about 6,000 users.

It may act more like Notes now, but WebShare 2.0 isn't likely to woo loyal users from Domino, the Web-ready version of Notes, analysts said. Instead, WebShare will appeal to companies that want to quickly develop Web-ready groupware in mixed messaging and database environments.

VERSATILE INTERFACE

Products such as Domino and Microsoft Corp.'s Exchange require gateways and application programming interfaces to work with disparate mail systems, databases and — on some level — the Internet. But WebShare was designed to fit in to a heterogeneous environment and speak Web protocols.

"[WebShare] works with all your current stuff," said David Marshak, a vice president at Patricia Seybold Group, a research firm in Boston.

WebShare lets users build applications more rapidly than with traditional groupware environments, said Roy Bean, a senior consultant at the Commonwealth of Massachusetts, which used WebShare to build an application that tracks information technology projects.

WebShare 2.0 comprises WebShare Server, a groupware engine that stores the application information; the WebShare Designer application tool; and the WebShare Mobile component.

WebShare and similar offerings from Thunderbolt and WebFlow Corp. generated excitement last year when it became clear companies wanted to deploy groupware on the Web. These standards-based offerings were even viewed as possible successors to Notes and other proprietary groupware.

But following aggressive moves by the leading messaging vendors to port their closed groupware platforms to the Web, products such as WebShare are seen as complementary to core messaging systems.

So although WebShare 2.0 can be run as a stand-alone groupware system, it also can be layered on top of Microsoft's BackOffice or Netscape Communications Corp.'s SuiteSpot. WebShare 2.n also supports several Web servers, Notes, CC:Mail, Netscape Mail and several SQL databases.

The new version will be available later this quarter.

To create one of the most dynamic Web sites, HotWired clicked on Sybase.

There are cool places on the Internet. And then there are truly hot ones—like the HotWired™ Network (www.hotwired.com), serving over two million page views every day. What helps HotWired generate all this heat? Sybase.® We provide the database and Internet **Internet Solutions** solutions that run their site end-to-end. We make it dynamic. Personalized. Different every time you see it. We even help track visitors' browsing habits, so content is automatically updated with each visit. Which is why more of the top Internet sites run on Sybase than any other solution. For a more in-depth look at what we've done for HotWired, visit www.sybase.com/hotwired. Or call us at 1-800-8-SYBASE. It's where the most dynamic Web sites begin.

SYBASE®
www.sybase.com

©1997 Sybase Inc. Sybase and the Sybase logo are registered trademarks of Sybase, Inc. Outside the U.S., call 1-508-287-2591. CODE 10000645. HotWired and the HotWired design logo are trademarks of Wired Ventures, Inc.

Mainframe middleware edges toward spotlight

▸ *Candle, Talarian offer new products*

By Tim Ouellette

TALARIAN CORP. in Mountain View, Calif., last week released a mainframe middleware product — originally developed for scientific and defense contracts — that offers users an alternative to IBM's MQSeries.

Middleware is moving to the forefront of user concerns as they try to integrate different systems, so vendors are scurrying to keep up.

Last week, for example, Candle Corp. in Santa Monica, Calif., bolstered its line of MQSeries management packages by buying the MQView software module from Apertus Technologies, Inc.

Features of SmartSockets 4.0 for MVS

Publish and subscribe method pushes desired information to target applications

Hot-failover lets users send or receive messages in real time regardless of whether their primary server is down

Dynamic message routing lets users choose message routing

Message-oriented middleware is a layer of software that delivers secure data messages to applications running on multiple platforms. That way, users avoid the platform-specific communications programming normally required.

PUSH TECHNOLOGY

Talarian's SmartSockets 4.0 for MVS "pushes" data messages to clients who have "subscribed" to have certain data sent to them (see chart).

For example, telecommunications equipment maker Nortel, Inc. uses a Unix-based SmartSockets package to deliver new equipment maintenance data to different groups automatically, said Johnn Dooley, senior software engineer at Nortel's Raleigh, N.C., office.

In contrast, IBM's MQSeries works on a "pull" model, in which users request certain data messages.

WEB WORKS

Analysts said Talarian's approach, called publish/subscribe, works well in intranet or World Wide Web applications that automatically notify users of changes in Web pages, for example. Sources said IBM is working on a version of publish/subscribe for MQSeries.

A SmartSockets 4.0 basic configuration costs $50,000.

Meanwhile, in the blossoming aftermarket of MQSeries-related management software, Candle reduced the number of players by buying Apertus' MQView software (CW, Dec. 2, 1996). It lets users centrally install, configure and monitor MQSeries.

Candle will use the technology in its Command Center for MQ product line, which competes with similar offerings from Boole & Babbage, Inc. in San Jose, Calif.

IBM moves AS/400

CONTINUED FROM PAGE 1

Conn. "Today [the AS/400] scales as well as any Unix system or better."

IBM officials wouldn't comment on product details or specific delivery times but said they were committed to a 40% yearly price/performance improvement for RISC-based AS/400s and 70% capacity improvement on high-end systems.

The 600 series will put even more distance between older CISC AS/400s and RISC models. That will force users to either stick with their existing boxes, known for their reliability, or move to new technology.

"They are going to break open the top end of their line. Today [the AS/400] scales as well as any Unix system or better."

– Tom Bittman, Gartner Group

About 425,000 AS/400s are installed, and most of them are CISC-based. But IBM officials said the move to RISC is progressing faster than even they expected.

"Sooner or later, there will be too much neat stuff that runs only on the RISC machine — including Internet and Windows 95 and NT server support — so that these users will make their decision to move," said Dave Peterson, president of Midrange Open Business Strategies in Rochester, Minn.

Kennebec Health System in Augusta, Maine, added a RISC-based AS/400 last year. But a pending merger with another health system that runs an older CISC AS/400 has Kennebec considering the eight- and 12-way systems to manage the combined computing needs, said Bill Terrell, Kennebec's chief information officer.

NO GO

Many of the midsize AS/400 shops that have already moved to RISC models will probably be happy right where they are.

"It would be at least another six months before we could absorb a new operating system [such as Version 4 Release 1]," said David Jones, director of computer services at the State Bar of California in San Francisco, which has installed a RISC server.

"But we won't need to upgrade to their new high-end models" because the organization is happy with the regular Advanced Server Model 50S that IBM optimized for Internet-related projects, Jones said.

The 600 series will be based on the Apache processor, a single-chip PowerPC module that will replace the seven-chip PowerPC module found in RISC AS/400s. The single chip speeds up processing times and supports eight- and 12-way clusters.

& **Pyramid unveils a new scalable SMP server. Page 39**

• Standard & Poor's lowers rating

Debt burden could weigh down Apple

By Lisa Picarille

THE WAY Apple Computer, Inc. tells it, the firm is sitting on $1.8 billion in cash, which is enough to buy the company's continued viability and independence as well as drive its turnaround.

But a closer look at Apple's balance sheet shows that the company also has $1 billion in debt that's due in the first half of the year (see chart).

"Apple is not in great shape in terms of real cash that is usable for all these great turnaround efforts because they have a high level of debt," said Jeff Matthews, general partner at Ram Partners LP, a Greenwich, Conn.-based investment firm. "They are just not generating enough cash flow."

"Apple is not in a good cash situation," added Charlie Wolf, an analyst at Credit Suisse First Boston Corp., a New York investment banking firm. "I'm not saying they are having a liquidity crisis, but it will be very difficult for them to survive as an independent entity with their current business model."

APPLE'S CASH CRUNCH

Short-term debt	
Estimated cost to acquire Next	$400M
Loan due in the first half of 1997	$180M
Cash as collateral for letters of credit	$177M
Fiscal Q1 loss	$120M
Estimated Q1 restructuring charge to be taken Q2	$100M
Conservative projection of Q2 potential loss	$50M
[illegible]	[illegible]
Long-term debt	
Loans and convertible bonds due 2001	$661M
Loans and convertible bonds due 2004	$3M
[illegible]	[illegible]
Total debt	$1.68M

APPLE'S TAKE

During a teleconference with financial analysts last week, Apple Chief Financial Officer Fred Anderson called the company's liquidity "very solid." And at a briefing at Macworld Expo earlier this month, Marco Landi, Apple's executive vice president, said the $1.8 billion will allow Apple to "make the investment to execute our strategy."

Macintosh users don't seem fazed by the financial situation.

"I don't think they will achieve profitability in the near future, but that is not stopping us from buying more Macs this year," said Stuart Greenfield, a systems analyst for the state of Texas in Austin.

Joyce Croker, assistant systems editor at *The Los Angeles Times*, which has 650 Macintoshes and 3,000 Pentium PCs, said, "It worries me a little bit and gives me pause, but I'm keeping my fingers crossed that they will get it together."

But the financial community is more pessimistic.

Standard & Poor's, a major New York bond rating company, last week downgraded Apple's cash position to "adequate." S&P also lowered the company's corporate rating and issued a "negative" outlook on Apple.

Earlier this month, the Cupertino, Calif., computer maker posted a $120 million loss for its first fiscal quarter of 1997, which ended Dec. 27, 1996. Apple also reported revenue of $2.1 billion, 33% lower than last year.

Anderson said Apple isn't expected to turn a profit until the end of the July-to-September quarter, rather than the current quarter as originally projected. That means it is likely to dip further into its cash reserves.

"This is not a bottomless well," said Vadim Zlotnikov, an analyst at Sanford C. Bernstein & Co., a New York-based investment banking firm. "Cash is going to get really tight after the current quarter. The pressure is on Apple to hit sustainable levels of profitability."

Firms go offshore for cheap year 2000 fix

CONTINUED FROM PAGE 1

grams — representing about 24 million lines of code — to one of the companies.

The company won't disclose what it spends on outsourcing but estimates it has saved at least 20% so far. Going forward, "we could continue to see significantly more savings," said Manuel Cancel, manager of the year 2000 project at Con Edison.

Once the decision was made to outsource, "we looked offshore because it was cheaper," said James Fox, director of information systems at Union Pacific Railroad in Omaha. The company recently outsourced a part of its conversion work to HCL America, Inc., a U.S. subsidiary of an Indian firm. The deal is valued at $5.3 million.

"We are definitely seeing this as a trend," said Howard Rubin, president of Rubin Systems, Inc., a market research firm in Seaford, N.Y.

"These outfits are like the Wal-Marts of software," Rubin said. "Whatever the reason people give for going there, it is the cost they went shopping for."

In quarterly surveys, Rubin's company tracks various aspects of information technology management and costs at 200 U.S. corporations. According to its estimates, about 15% of those companies are moving toward outsourcing their year 2000 work. Of those outsourcers, at least one in four is moving the work offshore, Rubin said.

Other analysts agreed. "About 10% of our clients are actively outsourcing right now. About 40% are planning to within the next year or so," most of them with offshore firms, said Capers Jones, chairman of Software Productivity Research, Inc. Driving them there are the lower costs and the relatively abundant availability of Cobol programmers overseas, he said.

In most countries where year 2000 work is done, the education systems — combined with government and private-sector support — are producing large pools of low-level computer talent, analysts said.

Software Productivity Research in Burlington, Mass.-based handles year 2000 consultancy work for a dozen companies per month on average, Jones said.

DECREASE IN QUALIFIED LABOR

The decreasing availability of qualified labor in the U.S. and an unwillingness to divert scarce IS personnel from current tasks to year 2000 work also are cited by observers as reasons for the trend.

"We are in the middle of a merger with another railroad, and we need our IT employees working on that merger as much as possible," Fox said.

"We realized early on that if we addressed the conversion issue ourselves, any ongoing work we had would come to an absolute halt," Cancel said.

The trend has meant big business for programming shops in countries such as India, Ireland, Israel and the Ukraine, analysts said. "You are spending money that does not earn you one dollar of profit. So if you can pay $50 to get a job done instead of $100, which would you choose?" asked James Thomas, vice president of marketing at Tata Consultancy Services (TCS) in Dallas. TCS, India's largest software firm with offices in the U.S., is involved in nearly 50 year 2000 projects worldwide — most of them with U.S. firms.

Analysts estimated that overseas companies typically charge 40% to 50% less than U.S. outsourcing firms for the same job. For example, work for which an average U.S. programmer would charge $60 per hour would cost $20 to $25 per hour in countries such as India or Ireland.

And it costs about half that in countries such as thew Ukraine, analysts said.

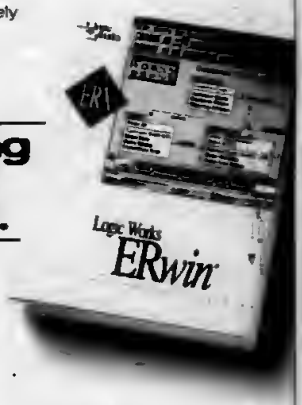
Although telecommunications and travel costs typically add to that figure, the final price tag is still substantially lower than it is in the U.S.

Five straight DBMS Readers' Choice Awards and 40,000 users say it all. If you work on important database projects, your design tool shouldn't be anything less than ERwin!

No tool works harder to make your life easier. Natively supports your database. Adds real productivity to application development. Or has breakthrough **Complete-Compare** technology that lets you iteratively design and maintain your database as real world changes occur.

And only Logic Works offers MODELMART,™ the industry-leading model management system. ModelMart scales ERwin from the desktop to the enterprise, leveraging the power of data modeling across your development teams.

Nothing else comes close.



There's no better time to get the best. Why use a second-rate design tool and get second-rate results? When your database depends on you, it's got to be ERwin. Call 1-800-78-ERWIN today, or visit www.logicworks.com to learn about special trade-up savings.

logic works

Logic Works and ERwin are U.S. registered trademarks of Logic Works, Inc. ModelMart and Logic Works with logo are trademarks of Logic Works, Inc. © 1997 Logic Works, Inc.

HP NetServer E and LD Pro Series

SMALL

HP NetServer LH/LH Pro Series

MEDIUM

HP NetServer LX Pro Series

Network Selection Guide

Peripherals

The most manageable and affordable [illegible] processor-based PCs and large-volume [illegible] printers, including the new HP LaserJet 5Si Mopier.

Manageable HP PCs

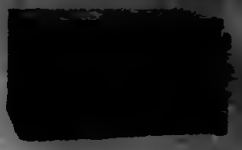
HP LaserJet 5Si Mopier

HP SupportPack

Network Connectivity

Comprehensive network solutions to fit any size network.
A complete range of high-performance switches, hubs, adapters and [illegible]

HP AdvanceStack Switch 100 & 200



HP AdvanceStack Switching Hubs

HP [illegible]

Management

HP OpenView puts network managers ahead of their network:

HP OpenView Professional Suite

Storage

HP SureStore [illegible] a full line of affordable storage products.

HP SureStore

HEWLETT® PACKARD

Yeah, we sell those ... let me check

▸ *Internetworking mergers leave sales staff uninformed on their own products*

By Bob Wallace

THE FRENZIED PACE of internetworking mergers is making it tough for information systems managers to find vendor sales staff and systems engineers who fully know their own product lines.

"It's going to worsen [as industry consolidation intensifies] and affect users that buy anything beyond core products from their vendors," said Tom Stenson, a network manager at State Street Bank & Trust Co. in Boston.

The problem is particularly noticeable in the internetworking industry because of the pace of consolidation that market is undergoing, analysts said. For example, Cisco Systems, Inc. and 3Com Corp. each have acquired six companies since January 1995.

"It wreaks havoc on future projects because it means I have to rethink what I'm planning and often start from scratch," said James Wiedel, director of networking at the University of Southern California in Los Angeles.

"I've run into a company where the router salesman doesn't know squat about any other products his company now sells. And I've run into a company where the remote access salesman doesn't know anything about remote access products his company got through an acquisition," Wiedel said. "And we're not talking about a short duration, either. This goes on for a while, sometimes for more than a year."

Users also worry that resellers are being left in the dust. "One thing we look for is reseller systems engineers that are trained on the whole product line of the companies whose products they sell," said Barry Gillespie, network services coordinator at St. Jude's Children's Hospital in Memphis.

"It's going to worsen [as industry consolidation intensifies] and affect users that buy anything beyond core products from their vendors."

– Tom Stenson, State Street Bank

"But after the merger that formed Bay Networks and the 3Com/Chipcom merger, the resellers' sales representatives and systems engineers didn't even know ... model numbers. It was a pretty scary time," Gillespie said. "We try not to slam anyone, but these situations force us to deal direct with the vendors involved or look at another supplier."

Other users agreed.

"We try not to use external sales channels because of this [phenomenon]," said Dave Meyer, a senior network engineer at the University of Oregon in Eugene. "We deal directly with Cisco. The problem is a pretty tough one all around, especially for users looking to buy products from companies their vendors acquire."

Internetworking vendors acknowledged the problem.

"When companies use acquisitions to fill out their product lines and innovate, they create tension for users," said Jeff Thermond, vice president of system marketing at 3Com. "We've done 14 acquisitions, but I wouldn't portray that we have everything sewn up here because we learn something new with every one."

MARKETECHNICS'97
MERCHANDISING AND OPERATIONS TECHNOLOGY FOR RETAILING AND WHOLESALING
February 7-9 1997
George R. Brown Convention Center
Houston, Texas
SOLUTIONS
TECHNOLOGY
FMI
FOOD MARKETING INSTITUTE

PeopleSoft's workflow-enabled applications route the right information to the right people at the right time in the right form. That can not only improve the productivity of your organization, but can also facilitate business process redesign, reduce paperwork, and automate administrative tasks. How's that for working hard?

PeopleSoft's workflow is open, so it can integrate with a variety of third-party products. You can use email for notifications, and electronic forms for turning around approvals. Or use internet forms and interactive voice response systems to communicate with PeopleSoft applications.

And, unlike some solutions, PeopleSoft's are flexible enough for you to define your own processes and procedures. In other words, PeopleSoft adapts to the way you work, not the other way around.

No wonder 1350 organizations worldwide have chosen PeopleSoft. For more information on how PeopleSoft's workflow solutions can help your organization, call 800-947-7753 and ask for our workflow white paper. Or visit us at workflow.peoplesoft.com. You'll discover we have the technology, the people, and the commitment it takes to help you increase your productivity. Without increasing your workload.

PEOPLE Soft

Enterprise business applications for finance, materials management, distribution, manufacturing, and human resources.

© 1997 PeopleSoft, Inc. PeopleSoft and the PeopleSoft logo are registered trademarks of PeopleSoft, Inc.

Great News For DIGITAL Clients.

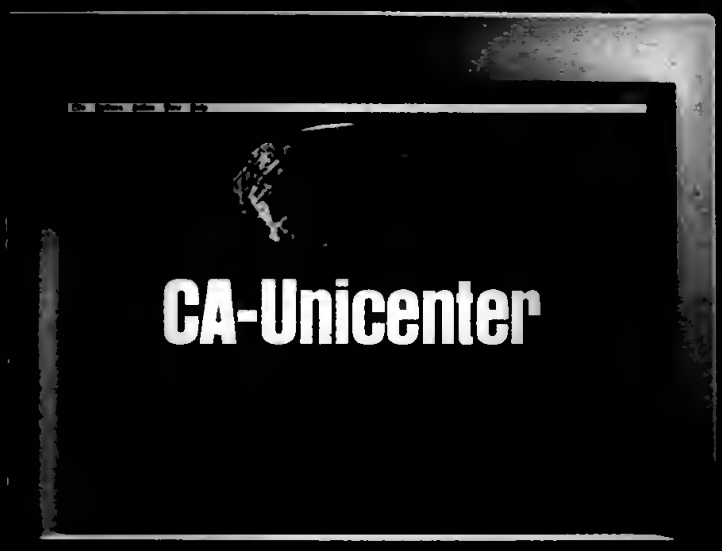
Incredible Opportunity For CA Clients.

The DIGITAL AlphaServer™ and AlphaStation™ systems and CA-Unicenter together create the world's most powerful enterprise management solution.

It combines the world's fastest high-performance servers and workstations with the industry standard for network and system solutions. With the integration of Polycenter, it's a single integrated solution that's delivered and supported by over 20,000 of DIGITAL's industry-leading service and support professionals.

CALL 1-800-DIGITAL

www.digital.com www.cai.com



d|i|g|i|t|a|l™ COMPUTER ASSOCIATES

A L L I A N C E

FOR ENTERPRISE MANAGEMENT

Telecoms are fueling merger mania

By Kim Girard

THE MERGER MANIA of 1996 should continue throughout 1997 as telecommunications companies scramble to gain market share in an age of deregulation.

Users should expect local service prices to dip slightly this year, mostly in urban areas where competition is the hottest. But long-distance companies that are protesting the terms of the Baby Bell invasion of their turf are slowing the process to a crawl.

While local carriers aren't expected to widely invade the $75 billion long-distance turf until next year, competition for a piece of the $90 billion local market has already begun.

To compete, long-distance giants and the regional Bell operating companies (RBOCs) are working toward one-stop shopping for business customers, analysts said.

Doris Brewer, telecommunications manager at Bally's Park Place casino resort in Atlantic City, N.J., said telecommunications deregulation has proven to be a double-edge sword.

Lower prices are inevitable, she said, as Bell Atlantic Corp. and AT&T Corp. jockey for her business. The company recently renegotiated its long-distance contract with AT&T, knocking several cents off its per-minute rate for the next three years, Brewer said.

The downside in the new market, she said, is that many more second-tier providers are knocking down her door. "It becomes an annoyance," she said.

These alternative carriers will become increasingly vulnerable under deregulation, where the mood is merge or die, analysts say.

MERGER MANIA

The following were the largest U.S. mergers and acquisitions last year:

Bell Atlantic and Nynex	$21.34B
MCI and British Telecommunications	$21.27B
SBC Communications and Pacific Telesis	$16.52B
LDDS WorldCom and MFS Communications	$13.56B
Boeing and McDonnell Douglas	$13.34B

Source: Securities Data Co., Newark, N.J.

Teleport Communications Group, the largest of the alternative local phone service providers, is among the companies rumored to be a possible takeover candidate.

If acquired, Teleport would join a growing list of acquired companies, which was kicked off last year by the mergers of Bell Atlantic with Nynex Corp. and SBC Communications, Inc. with Pacific Telesis Group.

GTE Corp., the subject of merger rumors for months, explored a possible alliance with MCI Communications Corp. before the MCI/British Telecommmunications PLC deal was announced. And there has been speculation surrounding a GTE/WorldCom, Inc. partnership.

Users can expect more deals among the remaining independent RBOCs — US West Communications, Inc., Ameritech Corp. and BellSouth Corp.

Utility companies — big players in the telecommunications market due to their ownership of rights of way — also may acquire a carrier or two, analysts said.

Raghu Ram, an analyst at Wheat First Butcher Singer, an investment bank in Richmond, Va., said this year companies will pull together merger strategies to provide bundling of all services.

"Three years from now you won't be calling me and asking, 'Who's your local provider?'," he said. "One company will do everything."

Telecoms are fueling merger mania

By Kim Girard

THE MERGER MANIA of 1996 should continue throughout 1997 as telecommunications companies scramble to gain market share in an age of deregulation.

Users should expect local service prices to dip slightly this year, mostly in urban areas where competition is the hottest. But long-distance companies that are protesting the terms of the Baby Bell invasion of their turf are slowing the process to a crawl.

While local carriers aren't expected to widely invade the $75 billion long-distance turf until next year, competition for a piece of the $90 billion local market has already begun.

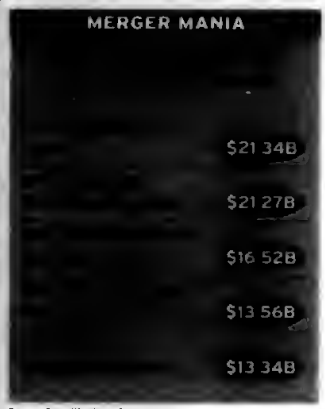
To compete, long-distance giants and the regional Bell operating companies (RBOC) are working toward one-stop shopping for business customers, analysts said.

Doris Brewer, telecommunications manager at Bally's Park Place casino resort in Atlantic City, N.J., said telecommunications deregulation has proven to be a double-edge sword.

Lower prices are inevitable, she said, as Bell Atlantic Corp. and AT&T Corp. jockey for her business. The company recently renegotiated its long-distance contract with AT&T, knocking several cents off its per-minute rate for the next three years, Brewer said.

The downside in the new market, she said, is that many more second-tier providers are knocking down her door. "It becomes an annoyance," she said.

These alternative carriers will become increasingly vulnerable under deregulation, where the mood is merge or die, analysts say.



Source: Securities Data Co., Newark, N.J.

Teleport Communications Group, the largest of the alternative local phone service providers, is among the companies rumored to be a possible takeover candidate.

If acquired, Teleport would join a growing list of acquired companies, which was kicked off last year by the mergers of Bell Atlantic with Nynex Corp. and SBC Communications, Inc. with Pacific Telesis Group.

GTE Corp., the subject of merger rumors for months, explored a possible alliance with MCI Communications Corp. before the MCI/British Telecommmunications PLC deal was announced. And there has been speculation surrounding a GTE/WorldCom, Inc. partnership.

Users can expect more deals among the remaining independent RBOCs — US West Communications, Inc., Ameritech Corp. and BellSouth Corp.

Utility companies — big players in the telecommunications market due to their ownership of rights of way — also may acquire a carrier or two, analysts said.

Raghu Ram, an analyst at Wheat First Butcher Singer, an investment bank in Richmond, Va., said this year companies will pull together merger strategies to provide bundling of all services.

"Three years from now you won't be calling me and asking, 'Who's your local provider?' " he said. "One company will do everything."

I.T. WORKFORCE EXECUTIVE SUMMIT '97
COMPUTERWORLD
1st Annual I.T. Workforce Executive Summit
Strategically Aligning the Enterprise I.T. Workforce
800-488-9204

The SAS® Data Mining Solution

The Power to Pr

With SAS software's integrated data mining and decision support tools, y can uncover all the business "secrets locked away in your massive datab *hidden patterns* that can make your business more profitable, more comp and more responsive to customer needs.

Exploit your data by exploring it with the richest variety of data analysis and visualization techniques. Use OLAP, neural networks, tree-based models, churn analysis, and traditional statistics to improve customer retention, target key prospects, profile market segments, detect fraud, analyze response rates, and much more. And then empower decision makers to exploit and share this newfound information using the most sophisticated forecasting, reporting, and graphics tools.

Visit Us on the Web... and Look into the Future of Data Discovery

SAS software is helping the Fortune 100 and thousands of other companies – in banking, financial services, insurance, health care, retail, telecommunications, and more – unlock the full potential of their data warehouses. Now, discover us for yourself at **www.sas.com/datamining/** or by giving us a call at **919.677.8200**.

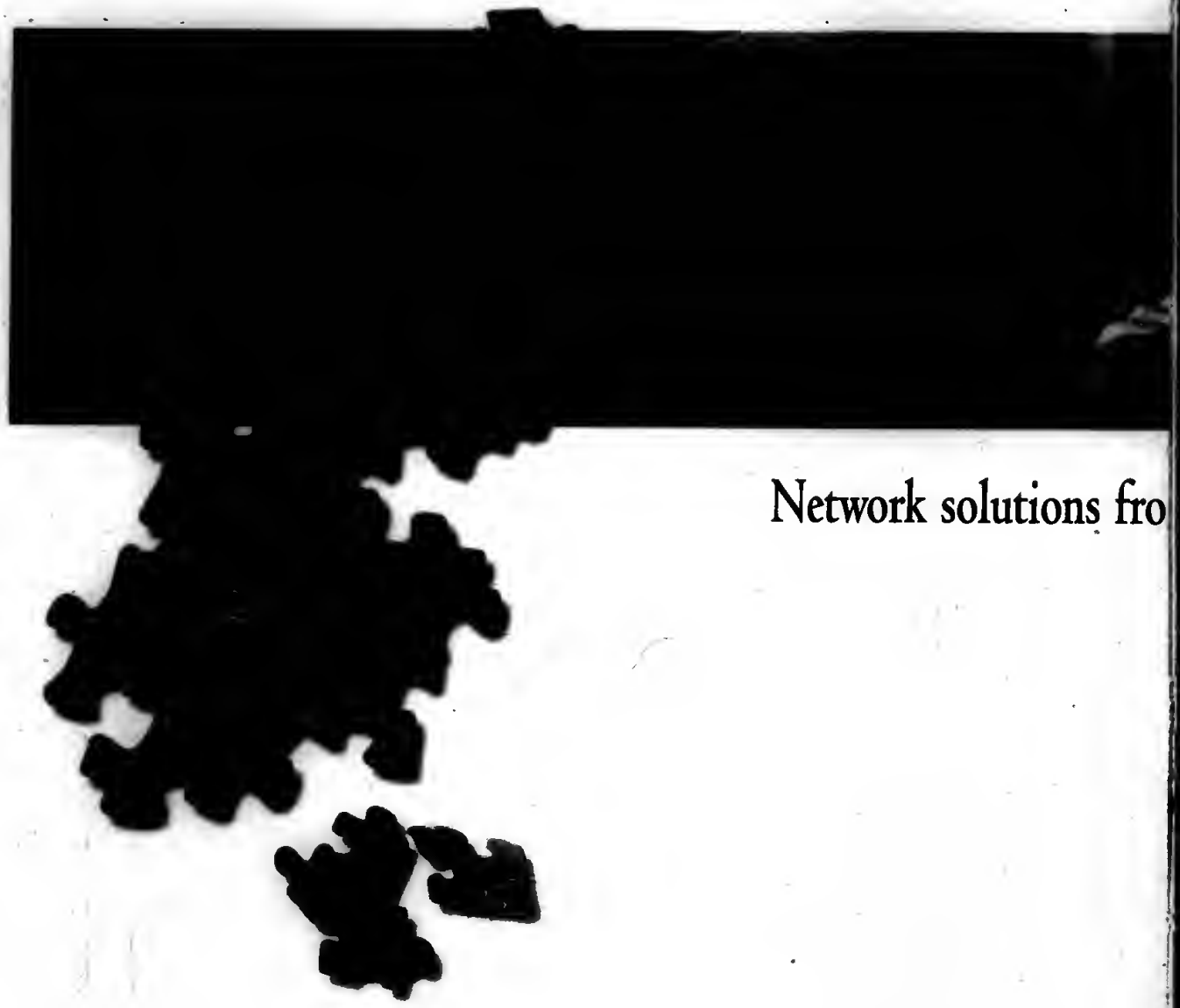
SAS® **SAS Institute Inc.**

The Business of Better Decision Making

Phone 919.677.8200 Fax 919.677.4444 In Canada 1.800.363.8397 E-mail cw@sas.com

SAS is a registered trademark of SAS Institute Inc. Copyright ©1997 by SAS Institute Inc.

Remember when all the pieces fit together right out of the box?



Network solutions fro

Corporate Headquarters: 35 Industrial Way, Rochester, NH 0386

We do.

m Cabletron. A simpler way to work.

Today's enterprise networks are such a complex maze of disparate parts that it can be difficult to keep the system running, let alone stay focused on the big picture. Wouldn't it be great to have a flexible, seamless solution that ensures what you buy today works with what you'll require tomorrow?

Enter Cabletron. We help you see the finished picture before another piece goes into place.

We believe in compatible migration for the life of your network, protecting investments even in the face of ever-changing business demands. Our vision remains sharp through the industry's strongest investment in R&D combined with select technology acquisitions that sensibly and seamlessly mesh with our product strategy. We're with you from the desktop to the data center, out to the wide area/remote access environment (ISDN, frame relay, ATM) and across the full spectrum of enterprise management software. And it's all backed by our legendary commitment to service and support, ensuring picture-perfect assistance–now and for the long run.

So whether you're laying out your company's strategic network puzzle or just piecing together this year's bandwidth needs, Cabletron truly does offer a simpler way to work.

For more information on how we can help simplify your view of networking, call **603-337-0930** or visit us on the Web at **www.cabletron.com.**

CABLETRON SYSTEMS

The Complete Networking Solution™

High tech dominates new factory

▸ *$130 million project showcases latest automation software, networking*

By Matt Hamblen

NEXT MONTH, under an ambitious rebuilding program, Malden Mills will open a new 600,000-sq-ft. factory building at a cost of $130 million. It will be filled with dozens of new dye and finishing machines that will be PC-controlled via human/machine interface software — primarily InTouch and InTrack from Wonderware Corp. in Irvine, Calif.

InTouch is widely used for machine controls, such as how hot a fabric dryer is set or how quickly fabric is pulled along the line. InTrack will monitor larger processes for such things as how much fabric is produced.

PC-controlled automation software from Siscodata in Italy has been installed in some machines to help inspectors examine and digitally record fabric imperfections and weight. Eventually, the mill will be able to give retail customers, such as Lands' End or L. L. Bean, Inc., a diskette that contains the digitally recorded inspection of each roll of fabric that can be loaded into a client's PC-controlled cutting machine.

Machine-controlled PCs will be linked to a nerve center over a 100M bit/sec. Ethernet network. Robotics will be used to mix dyes and pipe them to vats where 50-yard-long bolts of fabric are automatically inserted, removed and dried.

SWITCHING TO SWITCHES

Technical services manager Dave Wimberley spent the past year planning for a new global enterprise network to connect the Massachusetts mill with ones in Maine and Germany, and with a customer service center in the Netherlands. The network will function on switches instead of routers, with new PCs that run Windows 95.

"We'll completely eliminate the millennium problem because everything will be new," Wimberley said. "The fire was a bit of a blessing for our move to new network technology."

The mill has also signed a license with SSA, Inc. in Chicago for a business planning and control system, BPCS 6.0. It will help provide the company's 700 customers in 50 countries up-to-the-minute information on their orders and monitor the efficiency of the manufacturing process.

The deal is also risky; performance problems with BPCS 6.0's object-oriented design prompted some European customers to postpone purchasing decisions. But an SSA executive claims the product has been in use for nearly a year at 300 other companies. He claimed that once installed, the product should cut the supply chain cycle time in half.

Analysts William McSpadden and Bruce Richardson both said the Wonderware and SSA products, especially, will put Malden Mills at the forefront of information and automation technology. The improvements should enhance the company's bottom line, they said.

But McSpadden, president of Plant-Wide Research Group in Billerica, Mass., said the company will need a future version of BPCS to allow its customers to order over the World Wide Web.

Disaster sparks mill's IS overhaul

CONTINUED FROM PAGE 1

planning and operations, I got the call. He said the company hopes that using a top business manager instead of an IS manager to run the so-called Merrimack project will "help give customers what they want: timely information about their orders and an ability to deal with the company electronically."

Separately, automation experts were dispatched around the globe. Their mission was to find the best textile manufacturing innovations in the world (see related story, next page).

The goal was to replace aging information technology in order to gain better control of production, inventory and automation processes. The entire project is expected to be completed in the next 18 to 36 months.

William L. Baggeroer, Malden's vice president of IS, hadn't even reported for his first day of work when the fire hit. "The [11 p.m. news] report said Malden Mills just blew up, and I saw this blaze that looked like Hades and thought, 'My God, it's gone,'" he said.

When a worried Baggeroer called in, he was told to help set up a new IT system. The idea behind the system modernization plan was to fundamentally change the company "to make it more customer-focused instead of only manufacturing-focused," he said.

A bold undertaking, to be sure. But Feuerstein and his financial managers expect a huge return on what could be a $15 million investment. "It will come back many times in coming years by having customers give us preference," Feuerstein said. The investment is also expected to position the mill well ahead of its competitors.

The mill's IT vision is even more impressive, considering that the company, which was already struggling to rebuild its physical structure, could have held off on the systems revamp. Although flames swept through three century-old mill buildings and seriously injured 12 workers, the IS infrastructure was mostly spared.

Indeed, the day after the fire, the Hewlett-Packard Co. HP 3000 mainframe system was running, churning out the next week's payroll and staffing information. Only 10% of Malden's systems were lost, but that included some irreplaceable screenprint patterns.

HANDS-ON RESCUE

At one point during the blaze, however, the wind shifted and put the data center at risk.

Data center manager Al Autieri Jr. recalled driving to work, ordering the center closed and sending the overnight IS workers home. He decided to rescue hundreds of data storage tapes himself. "I grabbed them up any way I could in a panic and loaded them into a van," he said. He drove the van to his home until everything was settled several hours later.

As it turned out, the data center was spared, and it took hours to return the tapes to their proper order. Nearly all the vital corporate records were regularly backed up and stored by a contractor miles away, but "saving the most up-to-the-minute data somehow seemed vital at the

A COMPLETE OVERHAUL

The December 1996 fire at Malden Mills destroyed only about 10% of the company's IT infrastructure, but management plans to replace nearly everything in a modernization effort

PRIOR TO FIRE	FIRE DAMAGE	CURRENT PLANS
Mainframes: 5 HP 3000s	Spared	To be replaced with products running Unix, Windows NT, SSA's BPCS 6.0
HP and IBM PCs running Windows and DOS	300 destroyed	Being replaced with Hewlett-Packard PCs running Windows 95
Network routers	Spared	To be replaced with switches
Some manufacturing machines were automated	300 machines destroyed or damaged	Replaced or being upgraded to Wonderware's InTouch and InTrack, which are being installed to handle major dye and finishing-processing machines

"You are what you read."

SAVE OVER 73%

☑ **Yes**, I want to receive my own copy of COMPUTERWORLD each week. I accept your offer of $39.95* per year - a savings of over 73% off the single copy price.

First Name _____ MI _____ Last Name _____

Title _____ Company _____ E-mail address _____

Address _____ City _____ State _____ Zip _____

Address Shown: ☐ Home ☐ Business ☐ New ☐ Renew Single copy price: $3.00/issue * U.S. Only. Canada $95, Mexico, Central/South America $150, Europe $295, all other countries $295.

Please complete the questions below.

1. BUSINESS/INDUSTRY (Circle one)
10. Manufacturer (other than computer)
20. Finance/Insurance/Real Estate
30. Medical/Law/Education
40. Wholesale/Retail/Trade
50. Business Service (except DP)
60. Government - State/Federal/Local
65. Communications Systems/Public Utilities/Transportation
70. Mining/Construction/Petroleum/Refining/Agriculture
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Computer/Peripheral Dealer/Dist./Retailer
95. Other _____ (Please Specify)

2. TITLE/FUNCTION (Circle one)

IS/MIS/DP MANAGEMENT
19. Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Management
21. Dir./Mgr. MIS Services, Information Center
22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr./PC Mgr., Tech. Planning, Administrative Services
23. Dir./Mgr. Sys. Development, System Architecture
31. Programming Management, Software Developers
41. Engineering, Scientific, R&D, Tech. Management
60. Sys. Integrators/VARs/Consulting Management

CORPORATE MANAGEMENT
11. President, Owner/Partner, General Mgr.
12. Vice President, Asst. Vice President
13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT
51. Sales & Mktg. Management
70. Medical, Legal, Accounting Mgt.

OTHER PROFESSIONAL MANAGEMENT
80. Information Centers/Libraries, Educators, Journalists, Students
90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase (Circle all that apply.)

Operating Systems
(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep

App. Development Products ☐ Yes ☐ No
Networking Products ☐ Yes ☐ No
Internet Products ☐ Yes ☐ No

4. Which of the following products do you buy, specify, recommend or approve the purchase of? (Check all that apply.)
(a) ☐ Internet software
(b) ☐ Internet browsers
(c) ☐ Web authoring/development tools

5. Do you use the Internet? ☐ Yes ☐ No

COMPUTERWORLD

B4A7 9

"You are what you read."

SAVE OVER 73%

☑ **Yes**, I want to receive my own copy of COMPUTERWORLD each week. I accept your offer of $39.95* per year - a savings of over 73% off the single copy price.

First Name _____ MI _____ Last Name _____

Title _____ Company _____ E-mail address _____

Address _____ City _____ State _____ Zip _____

Address Shown: ☐ Home ☐ Business ☐ New ☐ Renew Single copy price: $3.00/issue * U.S. Only. Canada $95, Mexico, Central/South America $150, Europe $295, all other countries $295.

Please complete the questions below.

1. BUSINESS/INDUSTRY (Circle one)
10. Manufacturer (other than computer)
20. Finance/Insurance/Real Estate
30. Medical/Law/Education
40. Wholesale/Retail/Trade
50. Business Service (except DP)
60. Government - State/Federal/Local
65. Communications Systems/Public Utilities/Transportation
70. Mining/Construction/Petroleum/Refining/Agriculture
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Computer/Peripheral Dealer/Dist./Retailer
95. Other _____ (Please Specify)

2. TITLE/FUNCTION (Circle one)

IS/MIS/DP MANAGEMENT
19. Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Management
21. Dir./Mgr. MIS Services, Information Center
22. Dir./Mgr. Network Sys., Data/Tele Comm., LAN Mgr./PC Mgr., Tech. Planning, Administrative Services
23. Dir./Mgr. Sys. Development, System Architecture
31. Programming Management, Software Developers
41. Engineering, Scientific, R&D, Tech. Management
60. Sys. Integrators/VARs/Consulting Management

CORPORATE MANAGEMENT
11. President, Owner/Partner, General Mgr.
12. Vice President, Asst. Vice President
13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT
51. Sales & Mktg. Management
70. Medical, Legal, Accounting Mgt.

OTHER PROFESSIONAL MANAGEMENT
80. Information Centers/Libraries, Educators, Journalists, Students
90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase (Circle all that apply.)

Operating Systems
(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep

App. Development Products ☐ Yes ☐ No
Networking Products ☐ Yes ☐ No
Internet Products ☐ Yes ☐ No

4. Which of the following products do you buy, specify, recommend or approve the purchase of? (Check all that apply.)
(a) ☐ Internet software
(b) ☐ Internet browsers
(c) ☐ Web authoring/development tools

5. Do you use the Internet? ☐ Yes ☐ No

COMPUTERWORLD

B4A7 9

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 55B MARION OH 43306

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P O BOX 2044
MARION OHIO 43306-4144

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 55B MARION OH 43306

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P O BOX 2044
MARION OHIO 43306-4144

REINVENTING THE SHOP FLOOR

Search for innovations spans industries, globe

By Matt Hamblen

FOLLOWING THE devastating fire at Malden Mills in 1995, Mark Cristiano has racked up nearly 50,000 frequent-flier miles scouting out automation machinery controls and components as part of the rebuilding efforts at the mill.

Cristiano, the mill's automation manager, visited Germany, Italy and Switzerland to meet with machinery and control software vendors. Accompanying him was his boss, Michael Lev, manager of advanced manufacturing technology.

The two men, along with other mechanical and systems engineers, also flew to manufacturing plants, mainly in southern U.S., to see automation systems perform firsthand.

The transatlantic flurry of research was sparked by management's decision to standardize on machine-variable speed drives and programming logic controllers after the fire, which destroyed all or part of 300 textile machines and the PCs that controlled them.

"We were given a mission to create the most innovative manufacturing plant in the world," said Cristiano, an eight-year veteran of Malden Mills. "It's been the most exciting year of work I've experienced."

GROUND ZERO

"We were on a trend before the fire toward computer automation," Lev said. "The fire made it easy: Instead of converting machinery, we were able to start from ground zero and have it customized for us. We have the opportunity to use the best software in the world."

"It's best to see [the technology] firsthand," Lev said. "That's the way I've always done it. But after the fire, it was done in a more intense way."

For example, Lev and his coworkers visited a cigarette maker and even competitors' mills, all to verify that systems worked for them. It might seem unlikely, but Cristiano and Lev said competitors didn't mind sharing insights about automation technology.

Lev said the competitors know Malden Mills as a world-class operation. They may have granted Lev and others the tours in hopes of learning more about Malden Mills and its secret Polartec finishing process.

"They were trying to get information out of us, I think," Lev said.

In some cases, the investigations showed that the technology sounded nice, but wasn't proved. "We're on the cutting edge, but not the bleeding edge," Cristiano said.

There will be a big payoff with the new machines, in quality of work and the machines' efficiency, Lev said. "Things will be more consistent, also," he said. "Decision-making is removed from machine operator and the process engineer has control."

JOHN COSTELLO

"We were given a mission to create the most innovative manufacturing plant in the world. It's been the most exciting year of work I've experienced."

– Mark Cristiano, automation manager

time," Autieri recalled with a smile.

The fire destroyed half a fiber-optic loop on the 29-acre campus, half the phones, about 300 PCs in remote locations, 160 printers and part or all of 300 large dye and finishing machines.

The company's research and development and design studios lost some vital data that contained formulas and designs for printing fabric. Some of the fabric designs had to be recreated even though data backup procedures were in place. In one case, data backup tapes for designs were kept in a separate building, but both that building and the one that contained the design PCs were destroyed.

Some data was recovered, thanks to users who had taken PC floppy disks home.

One upside to the fire is that in the aftermath, managers seized the opportunity to reform business practices with technology as soon as Feuerstein decided to rebuild.

"To the credit of the executive group, they didn't lose sight of long-term goals," Baggeroer said. "They took advantage of the fire to speed up [these projects]." He was referring to the fact that Merrimack, the new systems project, was in its infancy prior to this. The fire gave the program its legs.

"Merrimack will give us many, many things, but one critical thing is it will give customers service and deliveries on time," Feuerstein said.

Merrimack "brings Malden Mills closer to a just-in-time production process," agreed Bruce Richardson, an analyst at Advanced Manufacturing Research in Boston. Such a change means fabric is manufactured to each customer's order instead of being placed in inventory at the mill's expense.

"Sometimes it takes a cataclysmic event like a major fire to bring about profound change in an organization, and that's clearly what's working here," Richardson said. "Left to their own devices, people usually don't make such sweeping changes."

JOHN COSTELLO

From left: Al Autieri Jr., data center manager; Mark Cristiano, automation manager; William L. Baggeroer, vice president of IS; and Dave Wimberley, technical services manager

Platform	Database/OS	Performance/price point
Compaq ProLiant 5000	**Sybase/UnixWare 2.1**	**8311/$95**
DEC 4100	Sybase/UNIX V3.2	7598/$152
Sun Ultra Enterprise 3000	DB2/Solaris V2.1.2	6662/$152
HP 9000 D370	Sybase/HP UX 10.20	5822/$148
IBM RS6000 J40	Sybase/AIX 4.1.4	5774/$198

intel inside
PENTIUM PRO
©1997 Compaq Computer Corporation. All rights reserved. Compaq
Logo and Pentium are registered trademarks and the Pentium Pro
respective companies. Published TPC-C results as of 11/96. The TPC-C

Excuse us if our enthusiasm seems a little excessive. But the most recent TPC results confirm something we're rather proud of: among mid-range servers, the Compaq ProLiant 5000 offers a truly superior level of price:performance.

Just consider the numbers: the ProLiant 5000 was the first platform to break the $100/tpmC price:performance level; and it was the first Windows NT server to outperform the competition running all major databases from Microsoft, Oracle, Informix and Sybase. (Some would call this shameless chest beating. We call it stating the facts.)

Of course, the TPC benchmarks are only part of the reason why the ProLiant 5000 can deliver industry-standard solutions for your enterprise.

For starters, it comes with a range of industry-leading integration management tools like Insight Manager and SmartStart. With them and advanced enterprise systems management software, you can more easily deploy, monitor and proactively manage your entire distributed enterprise from a single console. And with our open business philosophy called Distributed Access — a new model of connecting people to people and people to information — you'll always be assured of best-of-breed solutions based on industry standards.

distributed @ access

IT'S LIKE WINNING THE LOTTERY. RUNNING A MARATHON IN UNDER TWO HOURS. CAPTURING EIGHT CONSECUTIVE WORLD CHAMPIONSHIPS.

(THE LATEST TPC BENCHMARKS ARE IN.)

A perfect example of this is our partnerships with SAP and Microsoft. Simply put, no one can offer our experience and expertise in providing superior integrated R/3/Windows NT solutions for your enterprise. Our R/3 platform was the first certified for the Windows NT environment, and now more of the world's top businesses run their SAP/Windows NT solutions on Compaq servers. (Hmm, what a coincidence.)

So what's the bottom line?

The ProLiant 5000 offers an unparalleled level of price:performance, reliability, expandability and manageability (sounds like a salesman). Which means better enterprise solutions at the lowest total cost of ownership (sounds like a CFO). Which means you could be setting some records of your own pretty soon.

To learn more about our enterprise solutions, visit us at www.compaq.com.

COMPAQ

OPINION

Upgrade 97. Have you ever had one of those days when you had

one thing to get done but never got to it because more immediate tasks kept cropping up?

Humorist Patrick F. McManus, who had many of those days growing up in rural Idaho, believes there's a force in the universe that links otherwise unrelated chores into an unbreakable chain.

You want to go fishing, but first you have to dig a posthole for a broken fence. You loaned the posthole digger to the Millers, but the Jones' place is on the way, and you promised to return those tools you borrowed. Then the truck gets a flat. Soon it's too dark to fish.

That's the position you're in if you're thinking of upgrading to Microsoft's Office 97, the coolest desktop productivity, Internet-exploring, groupware suite in the universe.

It runs only on Windows 95 and Windows NT, so you have to come up with a desktop operating system strategy. Got one? Good. Did you standardize on one or mix them? Are the Macintosh and OS/2 users mad? Don't worry, they'll be happy.

OK, now upgrade that hardware — those Windows 3.1 machines don't have the horsepower to run Windows 95 or Windows NT.

Oops. You use several electronic-mail servers, but Office 97's cool collaborative features work best with Exchange servers. Better install some.

Wait, Exchange runs on NT Server and you run mainly Unix. Better buy some new servers.

OK, you've standardized on your favorite Microsoft operating system, upgraded systems, made Exchange your main E-mail system and added lots of NT Server software.

But wait. Your CEO wants you to cost-justify the upgrades, lay out a product road map and defend your dependence on Microsoft. Go back and do some more research.

McManus not only identified this situation — he even had a solution for it. Just go fishing.

Kevin Fogarty, *Sections editor*
Internet: *kevin_fogarty@cw.com*

LETTERS

Readers stoke the flames of the NC vs. PC debate

IN THE FORECAST editorial ["NC vs. PC," CW, Dec. 30/Jan. 2], one has to wonder what planet Maryfran Johnson is from.

She asserts that "80% of the business users out there feel more like *powerless* users — stymied in their work by buggy, bloated software and complex systems that crash for mysterious tech-wienie reasons." At that unbelievable 80% rate, businesses all over the U.S. should be screeching to a halt.

I have created PC-based network systems that deliver continued stability and reliability. It's when trinket-wienies (not tech-wienies) start slapping in cheap virus-detection junk, memory-hogging screen savers and pseudo-tools that everything goes haywire.

Johnson seems to unwittingly define the network computer to its own detriment with the use of the *Star Trek* example, calling the network computer "a single-function device that relies on a powerful network." That's the very thing users do not want in an age when even the single-function TV is becoming a multifunctional, interactive device. Who wants to be at the mercy of the "great network," especially when it goes down?

David S. Mohler
President
ClearLogic Corp.
Dayton, Ohio.
dmohler@clrlogic.com

AS BOTH A personal and a business user, I can definitely say that at work I'd really rather have a fully functional network computer. Why? Because I'm not paid to worry about managing and backing up all the crud on this outdated system. Who has the time? I need updated software. Do I ever get it in a timely manner? Of course not. The support techs are too busy pulling apart PCs, trying to figure out which hardware component went belly-up this time in offices around the building.

Despite what Paul Gillin writes, many of the trends that were the "latest fads" of the time did indeed impact our industry — and in a positive way. What are intranets but huge client/server systems? That gets to the biggest point I have with this debate.

> Why is it "either/or" instead of "and?"

Why is it "either/or" instead of "and?" I'm looking forward to the network personal computer.

It would store files locally for my personal stuff and pull applications and public files from the central server. I guess I'm not supposed to want the best of both worlds.

Ry Schwark
Basking Ridge, N.J.
rschwark@lucent.com

MARYFRAN JOHNSON is right on the money about the network computer. It's not just another Silicon Valley hype.

Unlike the "personal digital playtoy," the network computer is a financial cost containment tool. The Intel/Microsoft push/shove strategy for software, memory and MIPS has run its course with the chief financial officers of the world. My cursory look at the typical corporate PC user finds frustration with the current PC/LAN complexity.

John O'Brien
Lawrence O'Brien, Inc.
Gaithersburg, Md.

Computerworld welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Maryfran Johnson, Executive Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

COMPUTERWORLD

Leadership Series

By Vaughan Merlyn and Sheila Smith

Be Careful What You Wish For

By Vaughan Merlyn and Sheila Smith

As IS executives, we're great at planning what we want to happen, but we rarely consider the possible unintended consequences of our plans. How can we uncover the unexpected?

Hopes were high that summer of '95, as the IS management team at a major financial services company created a new vision for planning projects and setting target dates. Collaboration would be key: Business and IS would work together to make the necessary trade-offs to reach solid, achievable target dates for new systems. Business requirements would drive the planning and the trade-offs to be reached around scheduling, cost, quality, scope and resources. Never again would a project be driven by arbitrary end dates. Never again would the delivery date be master and the IS professional be slave.

Six months later, disaster struck. The company failed to get a key Internet-based product to market in time to beat the competition. Why? The underlying information technology just wasn't ready. The new year began with little to celebrate.

With the new project-planning method, how did this happen? Like a villain kidnapping an innocent victim, something crept up on the project and blindfolded it from behind — an unintended consequence of a well-intentioned change.

Somewhere along the way, the message became garbled. What IS folks heard was, "No more date-driven projects," rather than, "Collaborate with your business partner to set the date based on business needs." And since collaboration wasn't being rewarded, the IS group felt the message was clear: Plan the project in detail, and tell the business side what the date would be. The discussions never happened; the trade-offs were never made. Had those discussions taken place, the people involved might have opted to get a basic product to market quickly and add more functionality incrementally, reaping the benefits of being "first to market."

Good intentions gone bad are an all-too-common surprise for IS managers. Although most of us are excellent at thinking about what we want to happen — the desired outcomes and the *intended* consequences — we rarely stop to consider what could happen — the possible *unintended* consequences. So, what's missing from our efforts that causes these unintended consequences?

Illustrations by Brian Rasche

Why didn't we think of that before?

At the root of unintended consequences is a failure of thinking. We fail on multiple levels.

The first failure is assuming that IS projects are more logical, straightforward and free of political considerations than they actually are. We have been taught that the world is a simple, mechanistic place. So we plan and analyze under the assumption that there are simple cause-and-effect links between our actions and results.

In reality, the world — especially the IS world — is enormously complex. Subtle interrelationships, coupled with the natural IS engineering mind-set, become an albatross around IS' neck in terms of anticipating unintended consequences. The engineer designs a logical process that, when followed, is intended to lead to desired outcomes. We need, instead, to think more like ecologists, recognizing the inherent unpredictability of complex systems and looking at the whole environment as we plan and take action.

Take the case of a large oil company at which this "engineering approach" derailed efforts to implement an information technology architecture.

After creating a new IT architecture, the company's IS group established a unit to be the "keepers and enforcers" of the architecture. The unit reviewed all new IS projects to ensure conformance. Within six months, the "architecture police," as they came to be known, were a bottleneck that delayed projects and alienated both business managers and developers. Also, the architecture failed to prevent businesspeople from acquiring their own technologies, regardless of whether these conformed to the architecture. Within the year, the group disbanded.

The simplicity assumed by an engineering mind-set not only resulted in a failure to reach the architecture objectives, but also caused an unintended consequence of alienating IS customers and damaging relationships.

The second level of failure is often a matter of decision-making style and a lack of thought about the larger context. One CIO of a global manufacturing company admits the need for a co-pilot to help him think through and spot unintended consequences. "Once I make a decision, I tend never to look back. I need someone right there with me as I make choices, challenging me to think about what might happen. I always have time to manage; I must make the time to think." This decision-making style, which incorporates a bias for action with little post-action reflection, can make for embarrassing surprises, as described in the following scenario:

This particular CIO was faced with a problem familiar to many CIOs — dysfunctional relationships between IT and business. The solution:

Quickly form a group of senior IS professionals focused on building relationships by consulting with business units about IS needs and structuring projects to meet those needs. The relationships improved at record speed, as requests for IS projects came rushing in, a result of the group's hard work at mending fences. Great news! Finally, the businesspeople were talking to IT about how to enhance their processes using information technology.

©1996 Hewlett-Packard Company

Electronic business is a gold mine.

Stake your claim.

What company provides your

Internet solutions?

Now is the time to take your business to the net. Enter Hewlett-Packard We have exactly what you need to catapult your business into this exciting new arena Products Partners Consulting Expertise Solutions which set new standards for security, scalability and manageability. We're helping move companies onto the net—and we will do the same for you.

Hewlett-Packard Internet Solutions

HEWLETT® PACKARD

But bad news came fast on the heels of this burst of hope. Lacking a process for prioritizing IT investments, IS was left with a mountain of projects of varying business value and insufficient resources to carry them out. You guessed it: The best intentions of improving relationships actually worsened them when certain requests were denied or deferred. The bias-for-action style, coupled with a lack of thought given to defining the context in which the group would be deemed successful, caused this IS executive a serious embarrassment.

A final level on which we can fail involves our way of viewing technology, which can contribute to unintended consequences. A stark example of how a specific mind-set led to severe, unintended consequences appears in a particular division of a chemical manufacturer. For years, division executives viewed IT as a cost, not an investment. The goal: Minimize the percentage of revenue spent on IT. The IS group complied, reducing the level of spending to the lowest in the industry. New development was cut, hardware acquisition slowed, and key projects were deferred.

The unintended consequence of this cost minimization goal showed up rapidly and dramatically. Little investment was made to ensure that platforms were common and upgraded consistently. Without common platforms, communication among internal and external customers suffered, and without a proper infrastructure, business growth was hampered. Head count reduction produced lower costs in the IS organization, but business units started to hire their own IS people, resulting in hidden costs in the form of a shadow IS organization. Those good intentions born of a specific mind-set about IT costs inadvertently resulted in higher IS costs.

Uncovering the unexpected

Nabbing unintended consequences before they nab you is the name of the game. A few simple techniques can help.

One is to analyze unintended consequences up front. Try the following quick exercise to help you think through what might happen in a given situation. (See "The 'What Could Happen' Test" on page 7 for how this exercise works for the project end-date example mentioned at the beginning of this article.)

First, clarify what you're really after. Start with how the desired situation is framed (in this case, from the perspective of the IS professional) and the intended result. Then ask yourself, "What could happen if the change is not handled properly?" Think about role confusion and likely misinterpretations.

This exercise will not only alert you to possible unintended consequences, but it may also

IS and the art of cooking pigs

"The reason IS management actions often lead to unintended consequences is a failure of theory. When managers see something that doesn't fit, they use a technique they are comfortable with — going after more data. We don't need more data, we need more thinking. Think, learn, examine. These are the tools to avoid unintended consequences."

So notes Barry Stein, president of Goodmeasure, Inc., a Cambridge, Mass.-based organizational change consulting firm. To highlight IS managers' tendency to react to symptoms without fully understanding underlying problems, Stein draws an analogy, relating an essay by 19th-century British writer Charles Lamb, in which Lamb imagined how humanity discovered cooking.

Millions of years ago, Lamb supposed, people lived in large extended families, with domestic animals, in crude houses built of wood and thatch. One day, a house caught fire; the only casualty was a neighborhood pig. When the residents returned, all that was left was a plume of smoke, a pile of ashes and a wonderful smell. Eventually, [illegible] village [illegible] burned the house down.

The moral, according to Stein: "If you don't understand what's cooking the pig, you are going to waste an awful lot of houses."

uncover that the desired situation as stated is not the one you want.

The financial services company mentioned in the example did not really desire a state in which "projects are no longer driveo by arbitrary target dates," but rather one in which "project target dates are estimated collaboratively by IS and the business customer, based oo business requirements, a project plan and a discussioo of trade-offs among schedule, cost, quality, scope and resources."

Once you're clear on what you're after, examine the elements of what is desired (such as collaboration, planning, open discussions of trade-offs) and ensure that a common understanding of these elements is shared by those who must change. For IS's internal customers, planning IS projects may be a whole new experience. You must anticipate the customers' confusion and address it, or be ready for unintended consequences.

Next, anticipate that people will act according to incentives and rewards. Naomi Bloom, managing partner at Bloom and Wallace, a consulting firm in Fairfax, Va., that helps organizations re-engineer their human-resource business process, concurs. "Even if people understand what is expected, they only behave that way if all the supporting human-resource management elements are in place," Bloom says.

Causal loop diagramming is another technique that will help you look at an issue holistically and anticipate unintended conse-

The "What Could Happen" Test

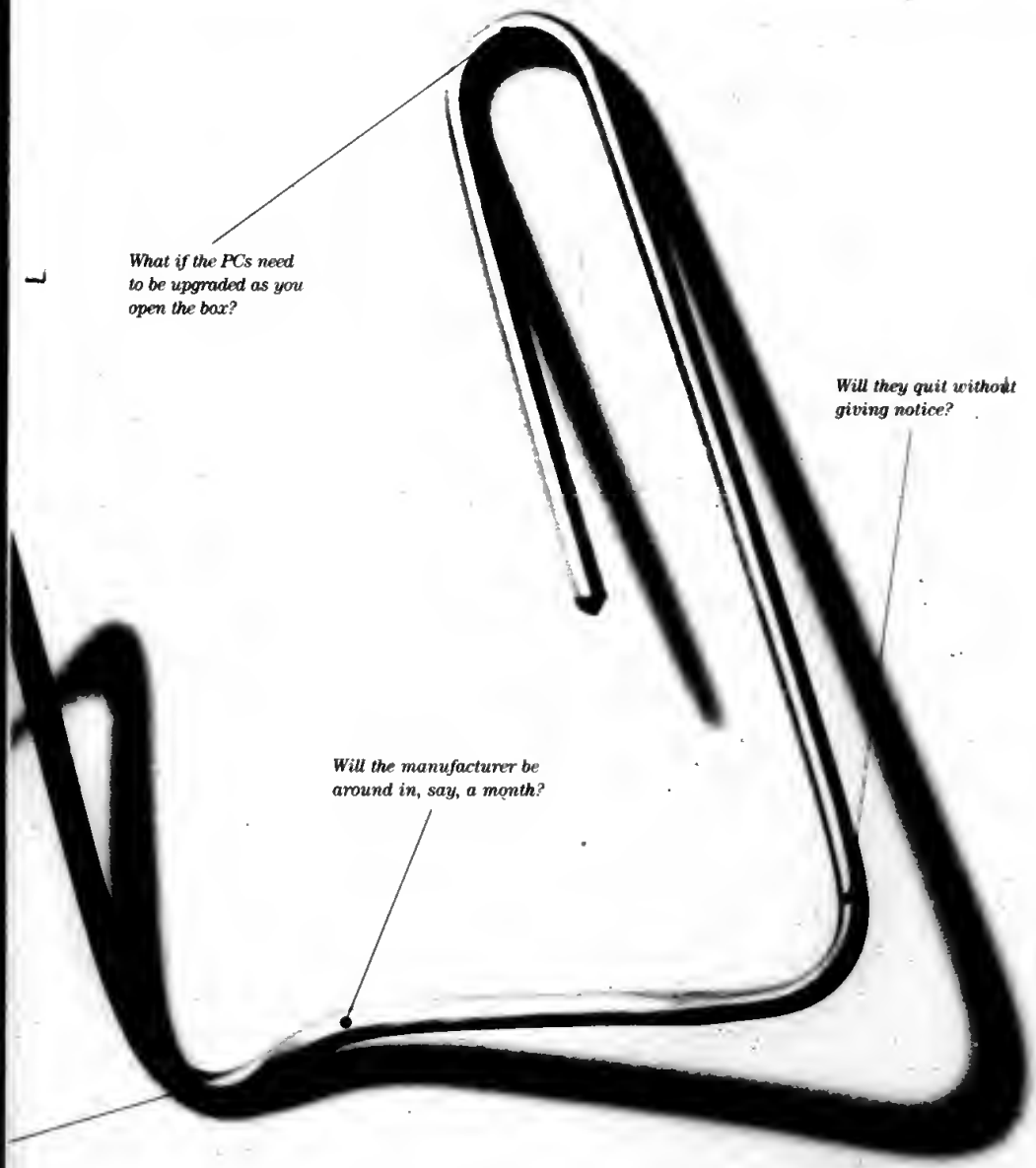
Stated Desired Situation	Intended Result	Possible Unintended Consequences
[illegible]	[illegible]	[illegible]

Will you need to issue new stock to afford them?

Is there a service center in your time zone?

intel inside pentium

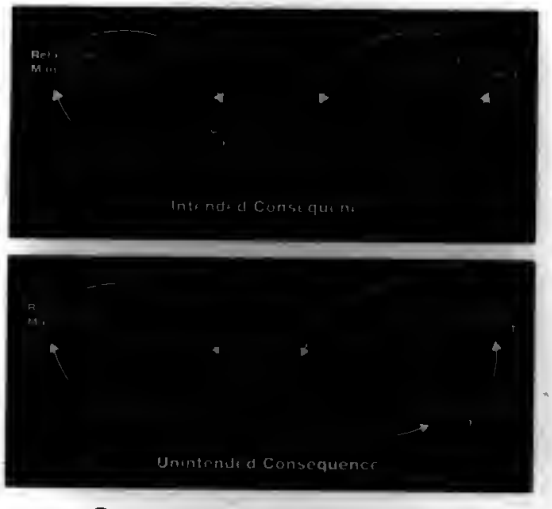
*In Canada, call 1-800-387-3867. †Starting U.S. street price for HP Vectra VE3. Monitor not included. The Intel Inside logo and Pentium are registered trademarks of Intel Corporation. ©1995 Hewlett-Packard Company. PP5001



HEWLETT PACKARD

quences. This diagram was originated by MIT Professor Jay Forrester and popularized by Peter Senge, author of *The Fifth Discipline: The Art and Practice of the Learning Organization* (Doubleday, New York, 1990), and Pegasus Communications, Inc., a Cambridge, Mass., publisher of the *Systems Thinker* newsletter. This technique would have been invaluable for the CIO who was trying to mend relationships and ended up destroying them instead. (See chart above.)

Spotting unintended consequences in the making is like sending our scouts to see what lies ahead. It's also similar to looking for emerging scenarios in scenario planning, which anticipates different future business worlds. As Peter Schwartz advises in *The Art of the Long View* (Doubleday, New York, 1991), "In the real world, you don't know ahead of time which scenario will take place. But you prepare for several of them, and then train yourself to look for one or two small details so that you can recognize the full scenario before it happens."



Causes and Consequences

The Relationship Managers generate a huge demand for IT services, initially increasing customer satisfaction and relationship with IT. But as demand increases without a way of prioritizing orders or increasing resources, delays in servicing occur and customer satisfaction and relationship with IT deteriorate.

We don't know which unintended consequence might happen, so we prepare for each, noting hints of trouble (see "Signs of Trouble," below). The chart shows an example of how the financial services company might have spotted a few unintended consequences in the making.

Signs of Trouble

Unintended Consequence	Indicator or Sign
[illegible]	[illegible]
Business misses opportunities to get products to market in a timely, competitive manner.	Timing needs and issues are not discussed as part of the project chartering process. Key business managers who understand market timing issues are not part of the project team or are not in the regular review loop.

From anticipation to action

When you see an unintended consequence in the making, don't berate yourself. Instead, reflect briefly, then act fast. Here are some guidelines:

- Doo't deny what's happening.
- Take time to revalidate what you intended to happen. Clarify the intended outcomes by describing them in terms of visible behaviors and day-to-day actions.
- Step back and see why the uninteoded coosequence came about.
- See what opportunities exist for correction. For example, in the case of the manufacturing company CIO who generated more IS requests than could be handled, several opportunities existed for correction. He could have defined a prioritization process for all IT investments, added more IS resources to meet demand, opened discussions with specific users about their priorities, regulated the new group's ioteractioo with users or pursued some combination of these.
- Consider whether the corrective action will cause other unintended consequences.
- Act quickly!

In the manufacturing company example, the CIO realized that as demand built and could oot be met, be should not rush off to get more resources, a step that might exacerbate the situation. Instead, after deeper reflection on what he originally intended — building better relationships — he found a way to both correct the unintended consequence and further develop relationships with the users. He used the golden opportunity of working with the business side on a process to set priorities for their IT investments.

Thinking through the issue to ensure you'll get what you want takes a bit of extra effort. The choice is yours. However, if you decide not to spend the time aod energy thinking through the possible unintended consequences and how to manage them, be prepared. Who knows what you'll get! ◆

COMPUTERWORLD

Read previous Leadership articles online.

See *Computerworld*'s Web site at www.computerworld.com/leadership.

Computerworld Leadership Series: *Editor: Allan E. Alter; Managing Editor: Joyce Chutchian-Fernanti; Designer: Dan Beard; Copy Editor: Pat Erickson. For article submissions and information, call Allan Alter at (508) 620-7714, or E-mail him at allan_alter@cw.com. For previous Leadership Series articles, call (508) 820-8125.*

©1996 Hewlett-Packard Company RND656

HEWLETT® PACKARD

Futile search for the fountain of reuse

Martin A. Goetz

A recent *Computerworld* article ["Reuse revealed," Oct. 14, 1996] correctly identified the risks of chasing the dream of object-oriented, reusable code. They include "analysis paralysis," high up-front investments in time and money and the chance that reuse will never spread across the organization.

But the article suggests these are just hurdles to be overcome. Not so. Attempts at reusing software objects have been failing for years. Reusability will *never* become widespread.

For starters, object-oriented programming (OOP) is difficult to learn. Cobol and PL/1 were successful largely because their English-like, procedural statements made them very easy to learn. Programmers could write application logic in a straightforward, easily understood and easily maintainable manner. By contrast, OOP demands that programmers and designers learn an entirely new and unnatural way of looking at the application as they search for reusable objects.

Trying to find and maintain reusable code just isn't cost-effective or practical

Don't be fooled by the steady stream of positive verbiage about the theoretical potential of OOP and reusable code. In the real IS world, reuse doesn't work. Study after study shows that most companies that tried OOP have abandoned it. And those that haven't have yet to develop a significant number of reusable objects.

Why? The simple truth is that trying to find and maintain reusable code for enterprise applications just isn't cost-effective or practical. IS directors should ask themselves why there are so few successes and so many failures in companies that attempted to develop reusable code.

Of course, all IS organizations want to increase productivity and reduce costs — and reusing code promises that. But it doesn't deliver. Most enterprise applications are constantly changing to reflect new company policies, practices and procedures. In a large organization, there are complex interactions among these applications. It may be possible to find reusable objects in this environment, but it will be difficult and very time-consuming.

The applications of midsize organizations typically change even faster. Even if reusable objects can be identified, they probably won't be reusable over a long period of time. Smaller organizations may be the best candidates for developing reusable objects, but the key test is whether the objects remain viable over the life of the application. Today's "success" might be tomorrow's software-maintenance nightmare. Although experts have strategies for identifying reusable code, they haven't solved the problem of changing the embedded objects to reflect organizational changes, business mergers or new government regulations.

History shows that the time-tested way to improve on third-generation languages such as Cobol — which has seen better days — is through enterprise fourth-generation languages (4GL). They are effective for the life of applications and have the benefit of being as easy to learn as Cobol. Why wade through the swamp trying to find reusable code when 4GLs are a proven alternative to Cobol for improving productivity?

OOP is at least 10 years old. It's been "successful" in a few small IS shops with a handful of OOP gurus. But these are isolated cases. Analysts at firms such as Gartner Group caution that there is no theoretical support for OOP's claims, that OOP is incompatible with relational database technology and that there have been relatively few success stories.

The seductive "benefits" of reusability may seem heaven-sent, but the devil is in the details.

Goetz, a software industry pioneer who received the first U.S. software patent (in 1968), is a management consultant in Teaneck, N.J.

Handhelds hand IS new troubles

John Gantz

I got my first Windows CE device last month. I'm afraid to touch it. Not that I don't think I could be more efficient with an electronic phone book to carry around or an appointment schedule that doesn't need to be reprinted every few weeks. And I would love to have an electronic-mail terminal that weighs less than a pound.

But this thing is a real computer, and it scares me. What if it breaks? What if I screw up and wind up in the innards of the operating system, not knowing how to get out? What if I forget what those cryptic little messages and icons mean? What if I lose my stylus?

So I loaned it to my company's IS manager. He's scared of it, too.

At the moment, our IS department is feeling G-forces from the roller-coaster ride of trying to beef up our client/server infrastructure and security just when our army of mobile analysts wants remote access to those client/server networks. The way our road-warrior analysts want to open holes in the network to get files and swap information scares the bejesus out of our IS manager.

That got me thinking about Windows CE and the impact of doubling or tripling the computerized mobile work force. We're talking about a mind-numbing array of personal digital assistants, organizers, tablets and smart phones hitting the market.

If all those handheld devices are used only for E-mail and personal organizing, then IS departments can cope with relative ease. But once the handhelds start acting as real remote-access terminals — and they will over time — they will be to IS departments what tribbles were to the starship *Enterprise*.

I've mentioned the headaches of mobile computing before in this column. But I've also mentioned the incredible benefits of giving mobile and remote users laptop communications and processing. I have argued that it's a good tradeoff; the increased organizational productivity is worth the headaches.

But for handhelds, I wonder if they will really provide the kind of productivity boost that will make them worth the support effort, from the enterprise's point of view. I'm particularly concerned about what happens if the market rallies around Windows CE and these devices go from being personal organizers to communicating terminals, Web browsers and eventually mini-notebook computers. Will handhelds be manageable?

Handheld devices will be hard to track, service and keep secure

One of the reasons notebook computers are manageable is that they aren't as mobile as we think. The No. 1 location for using notebooks is in the home. But Windows CE devices will be as mobile as a coat pocket. They'll be impossible to track and impossible to keep secure. They'll also be impossible to service — but easy to replace. They come in all different flavors and configurations. To be useful, they'll need their own software. Yikes. We'll be adding a whole new hodgepodge of devices to evaluate. They'll require the development of training programs and new applications.

So I think my IS guy has the right idea. Handheld devices that run Windows CE — or any other operating system that ships in volume — and are capable of communicating with corporate systems will be deemed "computers." As such, they need to be factored into the total IS equation. And that's a fairly complex equation already.

Gantz is a senior vice president at International Data Corp. in Framingham, Mass. His Internet address is jgantz@idcresearch.com.

Harness the Power of your Distributed Environment

PATROL

The true potential of your distributed environment is right there, waiting to be harnessed. The PATROL® Management Suite of products gives *you* the power. PATROL helps you better support your end users by ensuring their critical applications and data are available – 24 hours a day, 365 days a year.

PATROL proactively monitors a wide range of availability and performance indicators for each managed software solution, discovering errors and correcting problems – when authorized – before end users are affected. Supporting higher availability and performance for more leading applications, databases, middleware, Internet servers, and resources than any other management product. So your end users remain productive.

BMC Software, the BMC Software logos and all other product or service names are trademarks or registered trademarks of BMC Software, Inc. in the USA and in other select countries. ® and ™ indicate USA registration or USA

PATROL management support is available today for more than 30 leading software solutions, including SAP R/3, PeopleSoft, Oracle, Sybase, Informix, TUXEDO, Lotus Notes, Internet servers, and your in-house applications. Scaling efficiently across thousands of servers running Unix, NT, OS/2 or MVS. And integrating seamlessly with your existing system and network management frameworks, including HP OpenView.

PATROL technology is being used on tens of thousands of servers around the world. PATROL is the only application and data management product shipped with every Digital AlphaServer worldwide, and PATROL will be the only management product embedded on Intel's new i960 processor. No wonder leading analysts and consultants are calling PATROL the "clear choice" for managing applications and data across distributed systems.

BMC® SOFTWARE

For a copy of the most recent analyst reports and other information, CALL **800 841-2031** or 713 918-8800 or visit us on the Web at: **www.bmc.com/patrol**

Harness the Power-Today!

Trademark. Oracle and Informix are registered trademarks of, respectively, Oracle Corp. and Informix Software, Inc. Other logos and product/trade names mentioned are registered trademarks or trademarks of their respective companies. © 1996. BMC Software, Inc. All rights reserved.

COMMENTARY

The NCR legacy lives

DAVID MOSCHELLA

NCR'S REEMERGENCE as an independent public company passed quietly. If there was any reaction, it was mostly head shaking at yet another botched AT&T computer initiative. Former NCR CEO Chuck Exley was right. It never should have happened.

However, despite its current low profile, NCR retains a special place in our industry's history. Allow me a few hundred words to make the case that National Cash Register Co. was one of the four most influential companies in the evolution of the IT industry, right up there with IBM, Intel and Microsoft.

Most of us know NCR was the dominant supplier of mechanical cash registers. What is largely forgotten is how it became so. As chronicled by Thomas DeLamarter, Robert Sobel and others, NCR founder John Patterson was one of our nation's most ruthless competitors. Predatory pricing, control of the used equipment market, frivolous lawsuits, payoffs, slander and even sabotage enabled NCR to grab 90% of the market. Indeed, NCR has the dubious distinction of being the first company ever prosecuted under U.S. antitrust law.

What is also often forgotten is that Thomas Watson Sr. spent 17 years at NCR, where he learned the Patterson system and rose through the sales ranks. In fact, in 1912, Patterson and Watson were found guilty of criminal conspiracy in restraint of trade. The charges were later dropped during the appeals process.

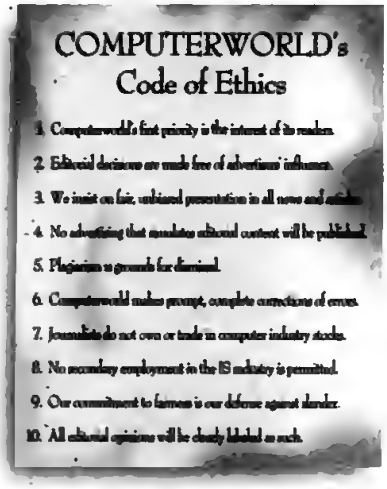
In 1914, Watson became general manager of a new company, the Computing-Tabulating-Recording Co. (C-T-R). Although he shunned Patterson's rough-and-tumble tactics, Watson adopted many of NCR's market-control techniques to make C-T-R the dominant supplier of accounting machinery. In 1924, Watson renamed the company International Business Machines. By 1935, IBM had more than 80% of the punch-card business. Government antitrust suits were launched against the company in 1932 and 1952.

You probably know the rest of the story. But isn't it strange that nearly a century of computer-industry leadership can be traced back through a single lineage? Patterson showed Watson how to monopolize a market. Watson sanitized NCR's approach to control the emerging electromechanical data processing business. His son, Tom Watson Jr., preserved IBM's power through its huge transition into the Electronic Age. Then, in 1981, IBM's decision to outsource its critical PC components unwittingly passed the baton to Microsoft's Bill Gates and Intel's Andrew Grove. A trillion-dollar industry now wonders what happens next.

Perhaps we shouldn't be surprised that our technology-driven industry often overlooks the roles of individuals. But were it not for the lessons of Patterson and the immense drive of Tom Watson Sr., the computer industry's strange pattern of monopoly vendor leadership might never have emerged. If IBM hadn't been so dominant, Intel and Microsoft probably wouldn't be in the same position today. Who knows what our industry might look like?

When this industry tries to understand why things are the way they are, John Patterson and NCR loom as large as anyone. Monopoly power remains our industry's defining competitive force.

Moschella is senior vice president of research at Computerworld, Inc. in Framingham, Mass. His Internet address is david_moschella@cw.com.



WORDS WE LIVE BY.

When you pick up a copy of *Computerworld*, you know you're getting the most objective, unbiased news and information in IS. Our code of ethics guarantees it.

Why do we make such a big deal out of editorial integrity?

Because the words you read in *Computerworld* often have a dramatic impact on your business, your career, and your future.

You use this information to evaluate new products. To get a candid view of emerging technologies. To find out the inside story on corporate strategies. To decide whether to jump ship or stay in your current job. To get the edge on your competition.

In short, *Computerworld* is filled with the words IS professionals like you live by.

WORDS YOU WORK BY.

Week in and week out, our editors and reporters call it the way they see it – on issues ranging from network management to reengineering. They dig deeply to bring you the most accurate, comprehensive news in IS.

It's no wonder over 147,000 IS professionals pay to subscribe to *Computerworld*. Shouldn't you? Order today and you'll receive 51 information-packed issues. Plus, you'll get our special bonus publication, *The Premier 100*, an annual profile of the leading companies using IS technology.

Call us toll-free at **1-800-343-6474**, or visit us on the World Wide Web at http://www.computerworld.com. To order by mail, use the postage-paid subscription card bound into this issue.

You'll get the kind of straightforward, impartial reporting you can work by. You have our word on it.

COMPUTERWORLD
The Newsweekly for Information Technology Leaders

Focus, foresight, clarity

all applied to something

you can't see

NationsBank is saving a substantial amount of time by using Visio to map out and plan their data communications network. They're also using Visio's ActiveX capabilities and the company's intranet to share Visio drawings with network project personnel nationwide.

Your job is to make sense of the network, the database, the Internet—all things you can't see. Which is why we've introduced Visio® Professional. It allows you to visualize your information systems, think about them clearly and decide how to best integrate them into your business processes. With Visio Professional you can easily create, store or exchange advanced network diagrams, process flow diagrams, entity relationship diagrams, software development layouts, web site maps, TQM diagrams and more. Plus VBA® is built right into the software for added customization. See for yourself. Call 1-800-24-VISIO ext. 95K or visit www.visio.com.

Visualize your business™

© 1997 Visio Corporation. Visio, the four-shaped logo, the Visio logo, and the Visualize your business logo are either registered trademarks or trademarks of Visio Corporation in the United States and/or other countries. Visual Basic for Applications (VBA) is a registered trademark of Microsoft Corporation. All other trademarks, trade names or company names referenced herein are used for identification only and are the property of their respective owners.

"because they rock," and other

technical reasons why Netscape uses Silicon Graphics WebFORCE servers, according to Webmaster Robert Andrews.

When you're the busiest sire on the Web, wheo you receive more thao 112 millioo hits a day, wbeo you dowoload 2.8 terabytes in a single week, you need servers that you can depend on. That's wby Robert Andrews, Netscape's Webmaster, turned to Silicon Graphics. Our WebFORCE™ servers combioe 64-bit MIPS® RISC microprocessors with the bigbest data tbroughput in the market. Our revolutionary S2MP™ system arcbitecture, witb iodustry-leadiog I/O, performaoce aod scalability lets your Web site handle even the most demanding workloads. And since Silicon Graphics offers the widest range of compatible servers, you cao scale your Web site smoothly as your on-line business grows. Technically speakiog, it's the best server you cao buy. And it can keep your Web site rockio'. For more informatioo visit our Web site at www.sgi.com/Products/WebFORCE or call 800.636.8184 Dept. LS0054.

NETSCAPE

A FEW OTHER SITES USING WEBFORCE

www.firefly.com
www.discovery.com
www.travelocity.com
www.bigbook.com
www.warnerbros.com
www.locoat.com
www.webcrawler.com

see what's possible

© 1996 Silicon Graphics, Inc. All rights reserved. Silicon Graphics and the Silicon Graphics logo are registered trademarks. O2, Origin, Origin200, Origin2000, S2MP WebFORCE, and See what's possible are trademarks of Silicon Graphics, Inc. MIPS and the MIPS RISC Certified Power logo are registered trademarks of MIPS Technologies, Inc. Netscape and the Netscape logo are trademarks of Netscape Communications Corporation.

Servers & PCs

Large Systems • Workstations • Portable Computing

Briefs

RATING RAID

The RAID Advisory Board, comprised of 50 storage vendors that market RAID systems, has scrapped its old RAID 0 to 5 rating system. The new scheme has three classifications:

- Failure Resistant Disk Systems (FRDS)
- Failure Tolerant Disk Systems (FTDS)
- Disaster Tolerant Disk Systems (DTDS)

SMP server debuts

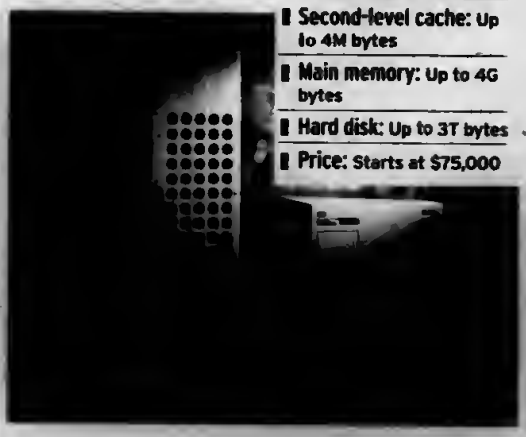
By Jaikumar Vijayan

ENTERPRISE SYSTEMS vendor Siemens Pyramid Information Systems, Inc. last week boosted its high-end Unix server lineup with models based on the 200-MHz MIPS R10000 chip.

The RM600 E20 and E60 models, which are successors to Pyramid's older Nile servers, feature cache coherent Non-Uniform Memory Access (CC-NUMA) technology and support up to 24 processors.

CC-NUMA is an architecture

SMP servers, page 41



PYRAMID'S RM600 E

- **Processors:** Up to 24 MIPS R10000s (200 MHz)
- **Second-level cache:** Up to 4M bytes
- **Main memory:** Up to 4G bytes
- **Hard disk:** Up to 3T bytes
- **Price:** Starts at $75,000

Vendors' new PC spec is a power play

By April Jacobs

MICROSOFT CORP., Intel Corp. and a third vendor have published a specification for PC power management designed to speed boot times and automate tasks such as shutting down peripherals.

The Advanced Configuration and Power Interface (ACPI) Version 1.0 specification will enable PCs to power up more quickly and perform some automated tasks, such as memory checks, after they are shut down in a low-power "sleeping" state. The third vendor, Toshiba America Information Systems, Inc., also published the specification.

The specification could be a boon not only to end users, but also to information systems managers who now have to configure shutdown processes on PCs for peripherals such as network adapter cards and hard drives.

Joe Pucciarelli, an analyst at Gartner Group, Inc. in Stamford, Conn., said the ACPI specification addresses a high-level issue for PC makers and a bottom-line issue for corporate IS managers.

Vendors such as Microsoft and Intel are using ACPI to make PCs more attractive in the

New PC spec, page 41

ACPI BENEFITS

- Speeds boot-up time
- Enables PCs to have a low-power sleeping state
- Lets PCs turn peripherals on and off

DATA STORAGE

Open systems devices expected to capture large share of market

By Tim Ouellette

USERS WHO RUN a mix of servers are looking for a single storage system to handle them all.

Such a system is a switch from server-specific disk storage devices and mainframe-only storage systems that exist in data centers around the world. But International Data Corp. in Framingham, Mass., expects the open systems storage market, where a disk system attaches to multiple server platforms, to account for 66% of the total storage market this year. Host-based mainframe and midrange storage will make up the rest.

"We needed to improve the availability of systems and move into a RAID-type environment, but we didn't want the performance penalties associated with host-based RAID," said Bill Martin, vice president of networking and telecommunications at Kelly Services, Inc.

The Troy, N.Y., firm is an early user of Sun Microsystems, Inc.'s new open systems disk array.

Sun's RSM Array 2000, which will be announced this week, will be able to run off Microsoft Corp.'s Windows NT and Hewlett-Packard Co.'s HP-UX servers by midyear. The high-availibility disk array has no single point of failure and will cost less than $1 per megabyte of data stored.

Sun's current SPARCArray disk systems run off Solaris servers only.

"Long term, this may work for us, as we are looking to open up our server environment," Martin said.

Other users are already at that point.

For example, Kredietbank in Belgium recently bought $10 million worth of Storage Technology Corp.'s Openstorage Disk Subsystems. Kredietbank uses HP 9000 servers. Although it bought internal disk systems from HP, the bank decided to improve performance and flexibility with an external system.

HP teamed with StorageTek to provide the latter's open systems storage products. Systems

Open systems storage, page 40

Extreme density

Researchers at IBM recently demonstrated components that read and write data on a computer hard disk at a density of 5G bit/sq. in. Five billion bits (5G bits) of data equal the text on 312,500 double-spaced, typewritten pages.

Current density for leading-edge disk drives is around 1.36G bit/sq. in., according to Disk/Trend, Inc., a market research firm in Mountain View, Calif.

IBM has been the technology leader in improving the density of hard disk drives, said Robert Katzive, an analyst at Disk/Trend.

Such a demonstration "is usually a good precursor of products to come. In the past, IBM has done demonstrations and followed them up within a few years" with products on the market, Katzive said.

He added that this hard-disk technology has, in the past, had the most impact on the 2.5-in. disk drives used in notebook computers.

— Stewart Deck

NEW PRODUCTS

TEXAS MICROSYSTEMS, INC. has announced the SP5500, a server that supports as many as four Pentium processors running at up to 200 MHz.

According to the Houston company, the server accommodates up to 768M bytes of main memory using two plug-in modules.

The SP5500 costs $5,650.

Texas Microsystems
(713) 541-8200
www.texmicro.com

CYGNET STORAGE SOLUTIONS, INC. has announced Infinidisc Robotic Compact Disc Library, with room for up to 500 discs and four CD drives.

According to the San Jose, Calif., company, Infinidisc provides storage costs for as little as 4.a cents per megabyte in a two-drive, 500-disc unit and up to 8.7 cents per megabyte in an eight-drive, 250-disc unit.

A four-drive, 500-disc unit costs $14,895.

Cygnet Storage Solutions
(408) 954-1800

MICROBOARDS TECHNOLOGY, INC. has announced a compact disc duplicator, the CD Blaster II.

According to the Chanhassen, Minn., company, when a user loads a CD in the multiformat CD duplicator and presses a button, the system delivers an exact duplicate within a few minutes.

Pricing starts at $2,995.

Microboards Technology
(612) 470-1848
www.microboards.pcall.com

FREEING UP STORAGE SPACE

Users are seeking storage products that aren't tied to one server vendor. The sales figures below show that the trend is expected to double the sales of open storage systems in the next three years.

*Projected

Source: International Data Corp., Framingham, Mass.

Open systems data storage

CONTINUED FROM PAGE 39

will be installed at Kredietbank's 745 branches, with capacities ranging from 4G to 48G bytes, according to Carl Tilkin-Franssens, the bank's director.

StorageTek's competition in the open systems arena is significant because the Louisville, Colo., company lets IBM resell its Iceberg mainframe disk storage products.

Other plans by vendors to boost their open systems offerings include the following:

- EMC Corp. in Hopkinton, Mass. — the open systems storage market leader — has cranked up the backplane bus speed of its Symmetrix open systems models from 200M to 500M byte/sec. and added new high-density 3.5-in. 9G-byte drives [CW, Jan. 13].
- Amdahl Corp. in Sunnyvale, Calif., is adding the same 3.5-in. drives to its LVS 4500 systems, which will be available in February.
- Although IBM's popular 7133 systems, based on Serial Storage Architecture, are aimed at RS/6000 servers, analysts said the rollout of Peripheral Component Interconnect adapters could let the 7133 attach to other midrange Unix servers. And IBM is also trying to resell the 7133 into other server environments.
- Digital Equipment Corp. is shipping the StorageWorks RAID Array 450, which supports Unix, Novell, Inc.'s NetWare and Windows NT platforms and can scale to up to 10T bytes of data.

I NE
DAT

New PC spec is a power play

CONTINUED FROM PAGE 39

face of competition from lower-cost network computers, Pucciarelli said. Corporate IS staff, meanwhile, will get systems management features that will let them take a more hands-off approach to PCs — which translates into less labor and time managing their desktops.

ACPI, introduced last year in draft form, will be supported by Intel in its next version of desktop and mobile chip sets and in future processors and OEM system products. Santa Clara, Calif.-based Intel plans to ship the processors later this year, but the company hasn't provided details about those products.

The specification defines a hardware interface that lets designers put power management features into a PC, including its hardware, operating system and application software.

Microsoft, in Redmond, Wash., plans to integrate the ACPI specification into its Windows operating systems, including Windows NT and future versions of Windows 95.

More than 70 vendors, including Dell Computer Corp. in Austin, Texas; Compaq Computer Corp. in Houston; and Digital Equipment Corp. in Maynard, Mass., have said they will support the ACPI specification.

YOU NEED ENCORE DATASHARE™ TODAY.

You hear it every day.
I need the Data. I need it NOW.

You need data from mainframe storage. You need data from open systems storage. You don't have time to wait. That's a problem.

You don't want to hear about copy time, conversion time, network traffic or tape speeds. You just want the data. And you want it where you need it. Not after the batch window. Not after a copy is made. Not after it's moved. NOW.

That's why you need Encore's Universal Storage Processor with DataShare™. There's no data transport, no copies made, no tapes to mount and no network delays. Just information: now. One common storage medium makes your data directly accessible by all attached platforms — mainframes, open systems and network servers — all sharing the data as soon as it's written. Encore DataShare — one shared copy of the data, where you need it, when you need it.

Don't wait for the data. DataShare is available now. Call Encore at 1-800-933-6267.

ED THE
A NOW!

3.6267

Data[redacted]e™
Data On Demand

ENCORE
COMPUTER CORPORATION
WWW URL:http://www.encore.com

SMP servers

CONTINUED FROM PAGE 39

that boosts performance of traditional symmetrical multiprocessing (SMP) systems by accessing main memory much faster than SMP systems. Companies including Data General Corp. and Sequent Computer Systems, Inc. have used the technique to build highly scalable SMP servers.

Pyramid's new servers, based on its Reliant Unix operating system, are aimed at markets such as online transaction processing, data warehousing and decision-support applications. Users of Nile systems can move up without having to rewrite their applications.

"By dropping the MIPS 10000 into their SMP line, and by combining some of the techniques of NUMA, [Pyramid] has come out with a solid SMP product," said Rich Partridge, an analyst at D. H. Brown & Associates in Port Chester, N.Y.

BIG BOOSTERS

Major performance boosters on the new servers include a two-level bus architecture with throughput of more than 1G byte/sec., a high-performance I/O subsystem and support for up to 20T bytes of external RAID storage.

One Pyramid user welcomed the announcement but saw little need for the new servers immediately.

"Right now, we have enough horsepower to run our applications," said Edward Hottat, information systems manager at Columbus Lines USA, Inc., a shipping company in Jersey City, N.J. The company runs its shipping management applications on two older RM600 systems that are based on 150-MHz CPUs and support about 12G bytes of storage.

"If we make any enhancements to our application, we might look for the greater capabilities that are offered on the new servers," Hottat said.

The Pyramid servers are "something we are definitely looking at" for data warehousing applications, said Rod Merry, vice president of IS at Damark International, Inc., a direct marketing company in Minneapolis.

"We are going to be comparing larger SMP systems and [massively parallel] systems," Merry said. The RM600 server would replace Damark's two older eight-way Pyramid servers.

Also significant, from a performance scalability point of view, is that the new servers can be integrated with Pyramid's RM1000 cluster server, making them among the few that combine SMP and massively parallel servers in one cluster, Partridge said.

Software

Client/Server • Development • Operating Systems

Briefs

CHECK IT OUT

Internal factors to consider when planning a data warehouse

Internal systems – Using a database you already have may be the fastest and least expensive way to go.

Corporate standards – If a business unit insists on a product that isn't one of your standards, be prepared to invest in middleware.

Nature of the application – Criteria should include projected data growth, number of users, query complexity and required response times.

Source: Patrick Gunningham, Inc.

[illegible]

[illegible]

[illegible]

Java gets missing link

▸ *Database connectivity enhances business use*

By Craig Stedman

JAVA APPLICATIONS are starting to get direct access to databases, a capability that prospective users said is needed to make the Java language more viable for business processing.

The direct Java links that are becoming available from database vendors allow end users to avoid having to go through bridges and other performance-throttling middleware to get at corporate data.

Some of the database links also will run entirely at the server level, eliminating the need to install database access code on the desktop.

McKesson's Charles Nettles

The company will replace some PCs with Java-based network computers

Those kinds of thin-client promises are just what McKesson Corp. wants to hear, said Charles Nettles, director of technology at the Information Technologies Division of the San Francisco-based pharmaceuticals distributor.

Late this year, McKesson plans to start swapping in Java-based network computers for some of the 5,000 PCs that its pharmacy customers use to place and track orders, Nettles said. McKesson hopes that will

Java, page 44

Macintosh faithful tested by Apple plans

By Lisa Picarille

APPLE COMPUTES, INC.'S strategy to support two operating systems has users pondering whether they will continue to embrace the Macintosh platform.

Earlier this month at Macworld Expo in San Francisco, Apple laid out its road map, which includes parallel development of the Mac OS at least through next year and creation of a second operating system by melding its now-defunct Copland operating system with technology from its $400 million acquisition, Next Software, Inc.

Apple said it plans to continue to release updates of the Mac OS every six months, as announced at Macworld in August. The Cupertino, Calif., computer maker made good on that promise earlier this month by releasing Mac OS 7.6, code-named Harmony [CW, Jan. 13].

Apple plans in July to deliver

Macintosh, page 44

RHAPSODY ARCHITECTURE

- Is built on the Power Macintosh and PowerPC platforms
- Its operating system includes a microkernel, I/O architecture and an advanced file system
- Is compatible with Mac OS
- Has OpenStep-based APIs, which enable preemption, protection and symmetrical multiprocessing

PROGRAMMING

Microsoft has challengers in C++ market

By Sharon Gaudin

MICROSOFT CORP.'S Visual C++ development tool reigns in the popular C++ arena, but two companies are in hot pursuit.

Sun Microsystems, Inc., Borland International, Inc. and Microsoft are all coming out with new versions of their C++ products. And it is a lucrative market — more than 40% of client/server development is done in C++.

This wave of tools based on C++ is part of the language's evolution into a key standard, according to Judith Hurwitz, president of Hurwitz Group, Inc. in Newton, Mass.

"People are spending a lot more development effort in the C++ arena than they did three years ago," Hurwitz said. "It's continuing on the course of more visualization, more ease of use."

Hurwitz said users are impressed with Borland's C++ Builder, which is expected to ship in early March. Borland's development tool takes the visual aspects of its popular Delphi and attaches it to a C++ tool.

C++Builder is part of Borland's move to bring the firm back into the forefront of the application development industry.

Microsoft, page 46

Borland offers solid, powerful C++Builder

By Howard Millman

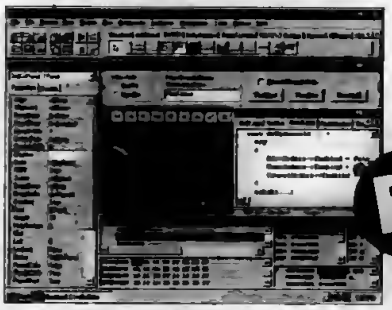
JUST WHEN YOU THINK it is time to check financially troubled Borland International, Inc. for a pulse, it bounces back with yet another worthwhile product. Its latest release, Borland C++ Builder, provides a powerful, drag-and-drop C++ integrated development environment.

PRODUCT REVIEW

The product includes a library of more than 100 reusable visual components, plus a set of C++ tools designed for linking to corporate databases via native drivers and Open Database Connectivity. It supports object-oriented features such as encapsulation, polymorphism and multiple inheritance.

Previously code-named Ebony, C++Builder was

Borland, page 44



Borland's new C++Builder includes a library of more than 100 reusable visual components and a set of C++ tools designed for linking to corporate databases

PRODUCT REVIEW

Borland C++Builder, beta

Borland International, Inc.
Scotts Valley, Calif.

B+

PROS
- Performance
- Comprehensive
- Ease of use

CON
- Borland's reputation for not always working out the bugs

Availability: First quarter 1997
Price: Competitive upgrade: $299.95; Borland C++ Client/Server Suite: $1,999

Macintosh faithful tested

CONTINUED FROM PAGE 43

Tempo, which will include the Finder desktop environment natively running on the PowerPC. That will enable users to execute multiple tasks such as launching and copying files simultaneously.

Tempo will update some of the Macintosh user interface to look more three-dimensional, while fully integrating Apple's Cyberdog Internet browser technology.

Tempo also is slated to include the runtime version of Mac OS for Java and a personal Web-sharing feature that will let Macintosh users set up their desktops as Internet servers.

Apple plans to follow up Tempo next January with a Mac OS version called Allegro and subsequently in July with Sonata. Apple officials said they sought to demonstrate a commitment to future development of the Mac OS, though they provided no details of those planned releases.

RHAPSODY IS NEXT

While Apple seeks to update the Mac OS, the company will attempt to squelch criticism that its operating system isn't modern. Apple's answer: Rhapsody, a new operating system that will offer users pre-emptive multitasking, memory protection and symmetrical multiprocessing with technology from Next.

The company plans to execute Rhapsody by coupling Next's OpenStep application programming interfaces with a compatibility box that allows current Macintosh applications to run with little or no modification. Those features will be layered on top of a microkernel, an I/O architecture and an advanced file system, according to Apple officials.

> Apple Computer reportedly spent more than $500 million on its now-defunct Copland next-generation operating system

Independent software vendors will get a Rhapsody developer release this spring, but the final version of the operating system isn't due until mid-1998.

Being forced to wait until then does not sit well with users. Bill McCauley, acting data processor manager at the Alaska Legislative Affairs Agency in Juneau, said he is more concerned about the here and now.

"What we need is a system that is easier to use and has fewer problems; and we want that now," said McCauley, whose agency has 250 Macintoshes and 125 PCs.

But even with his impatience for Macintosh improvements, McCauley said his Windows-based desktops "are even more troublesome."

OTHER OPTIONS

Norman Eide, information systems manager at American Eagle Insurance Co., said he is looking at Windows NT as an option.

Users relying on the Mac OS are stuck waiting, said Eide, whose Sacramento, Calif., company has about 70 Macintoshes and 10 PCs.

"By the time Apple delivers Rhapsody, and it is tried and tested, it will be late 1998," Eide said. Meanwhile, Windows NT is already bulletproof, he said.

"We would have stayed with Apple if they had delivered on their promises," Eide said.

Borland offers C++Builder

CONTINUED FROM PAGE 43

designed to bridge the gap between rapid application development environments, such as Borland's Delphi, and text-based C++ tools. But C++Builder uses the C++ language, whereas Delphi uses Object Pascal. In addition, C++Builder provides high-end features omitted from Delphi, such as a project manager window and low-level debugger.

Support of the Win32 application programming interface, ActiveX and OLE Automation makes C++Builder well-suited for building large-scale applications using Windows and Intel Corp.-based hardware.

Developers familiar with C++ will feel comfortable with C++Builder's syntax and code structure, although its graphical appearance differs from traditional C++ environments. Developers new to C++ get a bonus because the product's graphical interface can help them learn the language quicker than traditional text-based C++ development tools.

The late beta edition I tested seemed stable, intelligent and easy to work with — again proving that Borland knows how to make development products that reflect how developers work.

C++Builder applications start with the familiar Forms window and an Object Inspector that manages the inventory of controls resident in the current form. A double-click opens a window where you enter C++ code for the objects.

Instead of a separate tool box for visual components, C++ Builder uses a tabbed control, called the Component Palette, to group components by functions.

The development environment nicely spans the gulf between text-based C++ environments and visual programming models. For instance, the Project menu facilitates the builds, a Database menu eases connections to back-end data sources, and the Workgroups menu links to the source library management system.

To test the software, I built a gaming application that produces the sum of two dice thrown a specific number of times. Although this is a simple application, developing it went smoothly, and it ran quickly once compiled.

In addition, I converted existing C and Visual Basic applications into the C++Builder format. C++Builder allows developers to leverage their existing C++ applications because it recompiles all ANSI-compatible C++ code. Furthermore, C++ Builder interoperates with existing Borland C++ applications by means of common project file support, a common 32-bit native code compiler and an incremental linker.

Existing components are customizable into C++ classes, and you can build your own visual components.

But for all the similarity between visual development environments, some aspects, such as Grid Controls, act differently.

For example, Microsoft's Visual Basic uses a Grid control that employs a row-and-column property to define the current cell. That enables you to load the text property into the current cell and then "walk" to the next cell by changing the row or column variable, or both. In C++Builder, the Grid has a Cells property based on a two-dimensional array of strings. That allows simpler and more straightforward coding when loading the Grid.

> The comprehensive C++Builder offers good performance and is easy to use

Debugging also required some getting used to. The process temporarily got ahead of me until I discovered the "Trace to Next Source Line" command in the menu.

To help understand these and other differences, online help proved valuable. For example, it fully describes each control with property lists, method lists and examples.

Overall, Borland has blended the visual metaphor that Basic programmers have had with the C++ language to make a robust and comprehensive environment. It lets developers quickly build scalable projects by taking advantage of C++'s efficiency and organization.

The C++Builder beta seems stable. But it has to prove that it can overcome Borland's reputation for not always working out all the bugs.

Millman operates the Data System Services Group, a consultancy in Croton, N.Y. You can reach him at hmillman@mcimail.com.

Java gets missing link

CONTINUED FROM PAGE 43

reduce the $500 monthly tab for supporting and upgrading each PC, he said.

But server-driven direct access to McKesson's Oracle Corp. databases "is certainly one of the primary keys" to making Java workable, Nettles said. Otherwise, the clients wouldn't be as thin as desired, and McKesson would have to continue maintaining a mix of middleware to connect them to the databases.

DATABASE CONNECTIVITY

Vendors are providing direct access to data via drivers that hew to the Java Database Connectivity (JDBC) specification, which Java inventor Sun Microsystems, Inc. released last year. JDBC is a new rival to Microsoft Corp.'s ActiveX-oriented OLE DB data access interface.

Sybase, Inc. in late December started beta-testing software called JdbcConnect with its SQL Server database. The JDBC driver is due to ship this quarter and will support non-Sybase databases when used with Sybase's OmniConnect middleware, the vendor said.

Informix Software, Inc. said it expects to start limited shipments of a JDBC driver for its databases in March. Oracle also promised a first-quarter beta release of software that translates SQL commands into JDBC calls. A thin-client JDBC driver will follow later in the year, Oracle said.

The big three of Unix databases are following IBM, which included JDBC support in a release of its DB2 software that became available in December. IBM's driver includes code that has to be installed on client machines, a trade-off that IBM officials said was made to get better performance.

The McCarter Theatre in Princeton, N.J., which runs a network for itself and 10 other arts organizations, is testing Sybase's JdbcConnect for use with upcoming Java-based decision-support applications.

"With Java, there hasn't been easy database access up to now, so we've sort of been sitting on the sidelines and waiting," said Alan Levine, director of information services at the theater.

Levine said he wants to go the thin-client route to cut software installation and support requirements for the 300 PCs on his network. But direct JDBC links are critical for performance's sake because decision support and external ticket sales run on the same Sybase SQL Server database, he said.

KEEP CUSTOMERS HAPPY

"We don't want our customers waiting on hold to buy tickets any longer than they have to," Levine said. The theater also eventually wants to enable customers to buy tickets via the World Wide Web, which would put even more of a load on the database, he said.

Java-based network computing "would certainly simplify our environment," said Hugh Allan, manager of information technology at Dunlop Tire Co., an Oracle user in Amherst, N.Y. He said a planned upgrade to graphical versions of Oracle's applications was put on hold because it would have required more memory at Dunlop's PCs.

THE BUILDERS

DATA MARTS COME DELIVERED IN A CHOICE OF BOXES. . .

OURS OR PANDORA'S.

MULTIPLE VENDORS. . . MULTIPLE HEADACHES

Today, many data warehouse projects become a "Pandora's Box" because they're built with tools from many vendors. Even the best tools can become a nightmare if they haven't been designed and tested to work with one another. And what happens when you have a problem? Your data warehouse vendors are experts only in their own environments. . . not in each others. The solution? A **SmartMart™** data mart from Information Builders.

THINK SmartMart™. . . THE SMARTER DATA MART

SmartMart provides all the tools, technology and services you need to build, use, and manage a data mart. . . in one proven and affordable package. You get tools for data extraction and movement, transformation, multidimensional data storage, reporting and analysis, Web access, and data mart administration. You'll also get the consulting services you'll need to guarantee a fast, trouble-free implementation. And because **SmartMart is a complete, single-vendor solution**, all components are integrated and fully tested to work together so you avoid the cost and delays associated with piecing together technologies from multiple vendors. It's the closest thing to a data mart in a box. Best of all, SmartMart's open architecture ensures full integration with your enterprise information systems. . . now and in the future.

CALL THE BUILDERS

For complete information on our SmartMart data mart program, including a free white paper "The Data Mart: A New Approach to Data Warehousing", call 1-800-969-INFO.

http://www.ibi.com

800-969-INFO

In Canada Call 416-364-2760

Information Builders

SmartMart is a trademark of Information Builders, Inc., NY, NY 212-736-4433 E-mail: info@ibi.com

FRANKLY SPEAKING

Candidates for the Flat Earth Society

FRANK HAYES

ONCE — JUST ONCE — I'd like to hear someone in this business acknowledge that computer technology doesn't improve productivity.

We've all heard about the studies that show, despite the buckets of money companies have poured into IT since the dawn of desktop computers, how corporate productivity has barely inched up at all.

But we don't believe it. We insist that the studies are wrong (they aren't), that something else is siphoning away the increased productivity (it isn't), that there's a new "statistically invisible" productivity that justifies our IT investment (there isn't).

This amazing, blind faith has made IT departments the Flat Earth Society of the corporate world. We've seen the pictures from space; we just can't believe it's true.

That flat-Earth faith has also brought plenty of grief down on IS staffers — from the CIO on down — when they don't deliver on their promises of a return from that IT investment. Budget cuts, downsizing, outsourcing and housecleaning are what happens when that faith goes unfulfilled.

Part of the problem is that we're competing with the past. Factory automation made workers hugely more productive earlier this century. We want to believe that we can get the same results with office automation.

But remember what productivity is: the total output divided by the total number of workers. A leather-cutting machine in a shoe factory lets one worker do the work of a dozen human leather cutters. How many typists can a single word processor replace? Probably not more than two. Letters and memos aren't stamped out like mass-produced shoes. In most cases, they're custom-made.

Nor can you lay off 90% of your sales staff by using sales-force automation software or dump most of your accountants by buying spreadsheets. The customized work done by white-collar workers is a tougher nut to crack than factory automation.

We're also hobbled by our love of the technology. Let's face it, this stuff is *fun* — the best toy box in the world. How could something that much fun not make us more productive?

OK, fun isn't the same as productivity. But computers make us faster, right? They improve our quality, don't they? They let us do things we couldn't do before — doesn't *that* boost productivity?

Yes, sometimes. But that simple, cold productivity ratio — output per worker — can't be goosed up just by throwing technology at it.

Real productivity improvements come from smart application of the technology. That's where some IS shops have worked wonders, while others have fallen on their faces.

Sometimes the most productive solutions are low-tech: a cheap desk calculator instead of another window on screen, or a Day-Timer instead of a palmtop.

But most often, we just need to stay focused on the problems we're trying to solve with technology. Despite all the noise from vendors, reviewers and pundits who pitch even more of the best toys in the world, we've got to remember the goal: more output per worker, not just more technology.

Otherwise, we'll never be able to figure out where all that productivity went.

Hayes is Computerworld's staff columnist. His E-mail address is frank_hayes@cw.com.

Microsoft has challengers in C++ market

CONTINUED FROM PAGE 43

After a financial and mind-share slip, Borland is looking to work its way back with a series of product announcements, said Diane Rogers, Borland's group product manager for Delphi and C++.

Rogers said a new version of Delphi is slated for early in the second quarter, and JBuilder, Borland's Java development tool, is expected later this year. IntraBuilder, a point-and-click JavaScript tool for World Wide Web applications, was released in December.

SUN'S PRODUCT

On the Sun front, Visual WorkShop for C++ Version 3.0 is shipping for Unix environments. That version was redesigned to make it faster and easier to use, said Joe Keller, director of marketing and support at Sun's WorkShop product group.

And that redesign is working, according to Han Tunca, a programmer at TradeLink LLC, a Chicago-based futures and options trader.

"It's a really nice tool. It's easy to use and fast," said Tunca, who noted that TradeLink is adopting the tool after betatesting it. "This is really professional. The interface is nice to use. It seems to be logically laid out, and that's not something you always find."

Keller said Version 3.0 of Sun's C++ tool is editor-centric. "The editor used to just be one of the tools. Now it's at the center," he said. "All of the tools will be displayed within the editor, and that will save a lot of time."

Visual WorkShop for C++ also sports a new visualization tool that allows developers to drop in information and a three-dimensional display that can be rotated and magnified for a better view.

A spokesman for Microsoft declined to say what features Visual C++ will have. It is set to be unveiled at Microsoft's Developers Day March 19.

MIRACLE CURE for Packed Field Portability Ulcers!

netCONVERT solves ALL your cross-platform data conversion problems for VM, MVS, Unix and Windows/NT.

Processes mixed character and numeric fields, including packed, binary integer, even floating point.

Converts data as exact image conversion or to Comma Separated Values (CSV) format.

Handles files containing multiple record formats.

...from the makers of uni-SPF uni-REXX and uni-XEDIT.

800-228-0255
sales@wrkgrp.com
http://www.wrkgrp.com

wrk/grp
The Workstation Group

SHORTS

Web help for the help desk

Bendata, Inc. in Colorado Springs last week announced software that lets help-desk staffers with no previous Hypertext Markup Language experience build World Wide Web pages so users can process their own trouble tickets over the Internet. Designed to reduce users' calls to the help desk and cut telephone on-hold times, the HeatLink software is available for Windows NT servers.

Sybase aims at message-oriented middleware

Sybase, Inc. is taking another crack at message-oriented middleware after giving up last year on a product that was aimed mainly at mobile users. This time, the Emeryville, Calif., company is developing application-to-application messaging software that will be tied closely to its SQL Server database and an upcoming Web application server code-named Jaguar. The messaging software, code-named ATP (for Asynchronous Transaction Processing), is due to ship in the first half of the year along with Jaguar, Sybase officials said.

Baan becomes year 2000-compliant

Add Baan Co. to the list of year 2000-compliant vendors. The Dutch software company engineered its software starting in the early 1990s with four-digit year numbering. The result is that in four years, any references to the date will read 01/20/2000 instead of 01/20/00. The re-engineered software is included in the Tritan III line of products. Users of Tritan II or earlier who have technical-support contracts will be upgraded for free.

THE BUILDERS

Tell me how to get faster, easier and cheaper reports from my SAP R/3 C/S applications.

- ❑ Please send me information.
- ❑ Please have a sales rep call ASAP.
- ❑ We currently have SAP R/3 installed.

We plan to install SAP in:
❑ 1-3 months ❑ 3-6 months ❑ 6-12 months

Budget has been allocated ❑ Yes ❑ No

NAME

TITLE/DEPT.

COMPANY

ADDRESS

CITY STATE ZIP

( )
TELEPHONE

E-mail: info@ibi.com WWW: http://www.ibi.com

C9/19/97

Information Builders

CALL 800-969-INFO

In Canada call 416-364-2760

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 1305 NEW YORK, NY

POSTAGE WILL BE PAID BY ADDRESSEE

ATTN: Product Information Center
Information Builders
P.O. Box 1461
New York, NY 10117-1484

THE BUILDERS

♪♪ EVERYBODY'S WEB SURFIN' THE WebFOCUS WAY.

Sing to Tune of *"Surfin' USA"*

If everybody had WebFOCUS
Across the USA
Then everybody'd do reporting
The WebFOCUS WAY

They could access any data
In the Enterprise
Styled reports on their browsers
Before their very eyes

Don't have to know FOCUS
Or even S-Q-L
Transforms your answers
To H-T-M-L

Aggregation on server
Thin clients here to stay
Better order WebFOCUS
Call THE BUILDERS Today

Information Builders Web Ready Technology.

http://www.ibi.com

800-969-INFO
In Canada Call 416-364-2760

Information Builders

FOCUS and WebFOCUS are trademarks of Information Builders, Inc., NY, NY 212-736-4433 E-mail: info@ibi.com

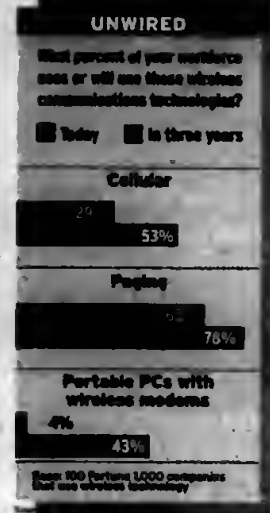
CLARiiON

Advanced Storage Solutions

The Enterprise Network

LANs • WANs • Network Management

Briefs



Gun dealers get a shot in the arm

By Kim Girard

FIREARMS DEALERS in California are going paperless with an automated system that ships buyer registration information to the state's Department of Justice for criminal cross-checks.

In California, a handgun or rifle owner must register the weapon through a licensed gun dealer.

Dealers throughout the state currently send sales information — called a record of sale — to the state's Justice Department through postal mail, a process that can take up to 20 days.

But a new automated front-end system provided by MCI Communications Corp. that links dealers to the Justice Department is expected to knock days off the approval process, enabling the department to complete it within a newly mandated 10-day waiting period on all firearms sales.

Gun deals, page 51

HOW THE SYSTEM WORKS

1. A dealer's record of sale, which includes information about the applicant, is forwarded via modem or voice line to an attendant or is sent directly to the MCI database.
2. MCI validates the dealer's license to sell firearms and the applicant's information, which includes name, address and 58 other pieces of data.
3. The California Department of Justice cross-checks the information against databases that track outstanding warrants, criminal records and department of motor vehicle records. The Department of Justice issues a ruling on the application, which is sent back to the dealer.

Web tools show seamy side

▸ *Users stumble on hidden costs, requirements*

By Patrick Dryden

EARLY USERS of Web-enabled management software are reporting some general problems caused by the otherwise beneficial access enhancement to their regular tools.

Specifically, users said they had uncovered some hidden costs, surprise requirements and potential embarrassments.

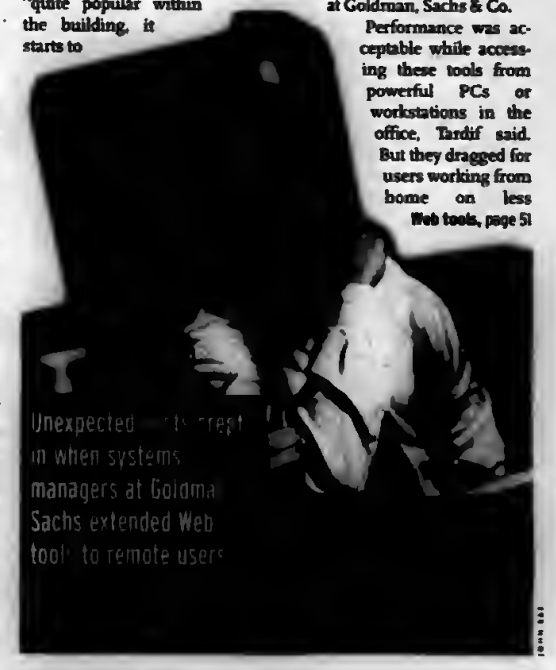
Reaching across the World Wide Web or a corporate intranet to maintain systems and networks demands bandwidth and performance beyond everyday browsing. And sensitive information may be revealed for the first time inside and outside the organization.

But information systems managers have shrugged off these issues as growing pains to endure while vital tools catch up with Internet advances. They are glad support staffers no longer have to vie for a few central consoles or distribute management information throughout the organization. Through browsers, technicians can work anywhere on the network or remotely, and savvy users can check availability and answer many questions themselves.

But while such access is "quite popular within the building, it starts to get expensive when more of us try to get in from home," said Michael Tardif, vice president of enterprise technology for operations and systems management at Goldman, Sachs & Co.

Performance was acceptable while accessing these tools from powerful PCs or workstations in the office, Tardif said. But they dragged for users working from home on less

Web tools, page 51



Unexpected costs crept in when systems managers at Goldman Sachs extended Web tools to remote users

JOHN BAY

Disk fragmentation hounds power NT users

By Laura DiDio

DISK FRAGMENTATION, an old problem dating back to the early days of MS-DOS, is back again. This time, it is plaguing Windows NT users who assumed they were immune to the problem because of the advanced NT File System (NTFS).

Disk fragmentation is a condition in which files are broken up and scattered into pieces on the hard disk. The degree of disk fragmentation increases with the number and size of the files stored on the hard disk, said Jonathan Eunice, an analyst at Illuminata, Inc., a consulting firm in Nashua, N.H. Hard disks that have significant fragmentation — 50% or higher — are likely to degrade overall system performance and in a worst-case scenario, crash the system.

Disk fragmentation made the university's Windows NT machines "horribly slow"

"Fragmentation is an unavoidable problem associated with storing data on your hard

NT users, page 52

DATA MINING

Utilities find advantages in automation

By Mindy Blodgett

THE DAYS WHEN utilities basked in their monopolies and counted on customers have been replaced by a deregulated world where utilities compete fiercely for business.

That calls for sales and marketing techniques, such as using sales force automation software, that can mine customer data for opportunities.

Boston Edison Co. took that route a year ago when the electric company began using sales force automation software from CallBack Software, Inc. in Burlington, Mass., to keep better track of corporate customers

Advantages, page 51

brilliance

Enter your innovative Microsoft Windows custom application in the sixth annual Windows World Open,

he international compet t e r es the b
a l br gl test in Wind s f p n t

h t t p w w w p r c o m

V t ur Web site to downlo d
k t meet last year u n e
jet details about this y r t

Entry deadline
February 10, 1997

All Windows World Ope F
v l demonstrate th r t
n the contest booth W
World COMDEX Spr n A
ne 2 5 1997 Final j t
w n rs are announ M f EO Br G t
at pe al award r r rg l ey t
pr entatio at W W OMD

D r t miss thi pport r t r
u tom Windows ba d lu t r r t l,
February 10 1997 and r th e g t r
deserve Call 800 829 4143 r 2 4 2 t d
email wwopen jcai com f r mor information

Microsoft COMDEX

COMPUTERWORLD WALL

COMPUTERWORLD'S CUSTOM APPLICATION CONTEST
WINDOWS WORLD Open

NEW PRODUCTS

NETSPEAK CORP. has announced a new version of WebPhone, a telephony software client for encrypted, point-to-point voice and data communications over LANs and WANs, including the Internet.

According to the Boca Raton, Fla., company, WebPhone 3.0, introduces real-time video communications, firewall proxy support and 32-bit system operation.

A Pentium-based PC with at least a 28.8K bit/sec. modem is recommended for high-quality reception.

WebPhone 3.0 costs $49.95.

NetSpeak
(561) 997-4001
www.netspeak.com

DOCUMENT CONTROL SYSTEMS, INC. has announced Message Server, an enhancement to MasterControl's document routing and approval module.

According to the Salt Lake City company, the product lets companies route documents electronically for review and approval using normal company electronic mail.

Prior to Message Server, MasterControl could send and receive messages only through a limited number of E-mail systems using the MasterControl E-mail gateway.

Message Server costs $1,499.

Document Control Systems
(800) 825-9117

REAL TIME INTEGRATION, INC. has announced NetAcquire 3000, a network data acquisition server that acquires, processes and updates real-time analog data at more than 750,000 samples per second

According to officials at the Redmond, Wash., company, the product uses a standard Ethernet network to communicate with a client computer that monitors and displays the results.

NetAcquire 3000 is priced at $8,495.

Real Time Integration
(206) 883-7563
www.realtimeint.com

Advantages in sales automation

CONTINUED FROM PAGE 49

and opportunities.

Rather than shuffling paper files, sales representatives now keep records on their laptops, said Brian Vickery, implementation manager at Boston Edison. The move means the 30-strong sales force spends more time with customers — about 50% of its workweek rather than the 20% of a few years ago, he said.

"If you can spend more time in front of customers talking about deals, that leads to more sales," Vickery explained. "It was one of our goals to increase that time, and automating the sales force aided in that."

SUPERB SOFTWARE

Boston Edison's interest in the CallBack software stemmed from its use of Sybase, Inc.'s SQL Anywhere, a database manager for remote and mobile communications.

Vickery said he liked the speed of the software and its locking capability, which prevents users from accidentally deleting important data.

SQL ANYWHERE

The Sybase SQL Anywhere database software, which is part of CallBack sales force automation software program, supports the following:

- **Remote sites through database replication in PC- and LAN-based organizations**
- **Windows 95 and Windows NT**
- **Desktop integration capabilities such as Dynamic Data Exchange and Dynamic Link Library**

The utility spent about $500,000 on the implementation. That included software and consulting.

Brian Balcom, an account executive at Boston Edison, said the automation boosted his productivity. "When we had paper files, I would have to take the time to search through the paper for each customer," he said. "Now I can handle to phone calls from customers or several queries in a much shorter period of time."

Yet Balcom said moving into automation was a difficult transition for some users. "The Franklin planner used to be the Bible here," he said, referring to the popular time-management system. "But it's hard to share information from a paper planner with another sales rep. Now we have a database that everyone can have access to."

Judith Hodges, an analyst at International Data Corp. in Framingham, Mass., said a recent survey of sales force automation vendors shows they are focusing particularly on utilities as a fertile vertical industry for potential customers.

"Because it is the kind of industry that has to manage so many different items at once, like billing, energy needs, etc., they are prime for such software as distribution management products and other sales force products," Hodges said.

Web tools' seamy side

CONTINUED FROM PAGE 49

capable PCs and from a remote site over a modem instead of the company network.

Graphics display and performance aren't as good on a browser as they are at a console dedicated to displaying management data, and operators must remember to hit reload to see the latest information, said Jeff Leggett, webmaster and network services manager at Mitsubishi Consumer Electronics America in Norcross, Ga.

TAKING RESPONSIBILITY

Supporting Web-enabled management tools adds a new load to an IS group because "now someone has to be responsible for a Web site," said Steve Tindall, technical specialist at Allegiance Healthcare Corp. in McGaw Park, Ill.

"That's something we took on without a lot of expertise, and it required a heck of a learning curve," Tindall said.

For Tindall and other administrators, opening up management information raises security concerns that demand attention.

"Someone inside the company might change program parameters so we lose a week's worth of valuable performance data before we know it," Tindall said. "Externally, we don't want to reveal the IP addresses of our routers." So administrators must remember to assign access privileges, if possible, and update firewall software.

CLOSE WATCH

After security is ship-shape, though, some IS managers find they can't fudge on their responsibilities.

That's because superiors and watchdogs within the organization can easily monitor network availability, systems performance and overall service provided to end users.

For example, anyone within the 335-store chain of Long's Drug Stores of California, Inc. can call headquarters in Walnut Creek, Calif., to complain about slow response in processing insurance claims or clearing checks there.

These days, however, "technologically savvy executives" can pop up reports at their desks to check the chain's network performance, said Dave Klinzman, director of network services at Long's Drug Stores.

"Web-based reports put us under the gun," Klinzman said. "Now we have to be as available and responsive as the phone company."

Gun deals get shot in arm

CONTINUED FROM PAGE 49

When the new law takes effect April 1, 40% of the state's 1,000 firearms dealers will be connected to Pentium computers lent by MCI.

The computers operate on Windows 95 and have 60M bytes of memory.

Using 28.8K bit/sec. modems, dealers will send records of sale directly to MCI. About 600 smaller dealers will use toll-free telephone numbers to call in information to MCI attendants.

"As a dealer who has to deal with a lot of paperwork, I find this to be a very strong move forward," said Bob Posner, co-owner of the San Francisco Gun Exchange. Posner said he worked with the group that is changing the state's system and will get a computer from MCI. "I think it's going to expedite our processing and make things a lot easier on the dealer, the state and the consumer," he said.

Using the new system, MCI will track purchases and bill dealers monthly for processing fees owed to the Justice Department, eliminating the need for dealers to send daily checks through the mail.

Overall, the industry trend is toward more public/private alliances that make public institutions run more efficiently, said Mike Humphrey, business director of telecommunications at Public Technology, Inc. in Washington.

> As a dealer who has to deal with a lot of paperwork I find this to be a very strong move forward

"A lot of local and state governments desperately want to get away from the paper," Humphrey said. But, he added, "It's very difficult to re-engineer systems and get away from that. Insurance companies are the best example of this."

MCI won the project bid because the company's system could beat timing requirements of the new law and had the required database technology, said Mike Broderick, firearms program manager at the Justice Department in Sacramento.

Through the contract, the department will pay MCI $2.63 for each dealer transaction, or about $920,000 per year, to assist with about 400,000 firearm sales.

"Savings will be a wash, but we'll be able to meet a 10-day turnaround time," Broderick said.

MCI's new system cross-checks the accuracy of 60 items on the dealer's application, which includes the applicant's name, address, height, weight, driver's license number and other background details.

After MCI's process, a Justice Department fact-checking analyst enters an identification number or name into the department's Consolidated Firearms Information System, which brings up outstanding federal warrants as well as criminal and motor vehicle history.

By merging three separate databases last year, the Justice Department reduced its record-checking staff from 100 to 40 people and cut 50% of all background checks to 48 hours.

NEW PRODUCTS

MICROSTAR LABORATORIES, INC. has announced DAPcell software for distributed intelligent data acquisition and process control applications on industrial networks.

According to the Bellevue, Wash., company, a user may control a DAPcell from any Windows NT or Windows 95 PC on the network. The price is $995 for the first license on a network; each additional license costs $495.

Microstar Laboratories
(206) 453-2345
www.mstarlabs.com

GANDALF TECHNOLOGIES, INC. has announced the PBX Extender Pack for its Xpress Connect 5232I.

According to the Nepean, Ontario, company, the PBX Extender Pack provides remote users with single-device, two-way access to their corporate private branch exchange.

The price is $695.

Gandalf Technologies
(613) 274-6500
www.gandalf.com

ASCEND COMMUNICATIONS, INC. has announced the MultiIDSL family of products, including IDSL for high-speed Integrated Services Digital Network Internet and remote-office access to enterprise networks. According to the Alameda, Calif., firm, IDSL is a $3,000 eight-port line card for the MAX 4002 and 4004 multiprotocol WAN access switches.

Ascend Communications
(510) 769-6001
www.ascend.com

Switching war helps Ethernet users

By Bob Wallace

WAR ISN'T REALLY HELL if you are an IS manager looking to score some Ethernet switches. Price wars are sending the cost of Ethernet ports spiraling down like a flaming fighter plane.

A LAN switching market jammed with vendors, combined with widespread demand among users who want more bandwidth than they get with shared Ethernet connections, is driving down the price per port of desktop and workgroup Ethernet switches from the $300 to $400 range six months ago to about $125 now.

And that's only the *list* price. Some users said they have been able to get discounts of up to 40% by wheeling and dealing with resellers and through bulk contracts with individual vendors.

COST SAVINGS

Rather than force all the members in a workgroup to share a single 10M bit/sec. connection, the switches provide 10M bit/sec. speed to each user. They also typically come with at least one 100M bit/sec. Fast Ethernet port that provides a fat pipe to high-speed servers.

"With these latest prices, we're finally at a point where 10M bits to the desktop is not only a very viable technology option, it's a cost-effective one, too," said Maralyn Rosenblatt, vice president of client services/desktop technologies at Countrywide Home Loans in Simi Valley, Calif. "It'll enable users to more easily and quickly upload research materials and download files from the Internet, deploy higher-quality videoconferencing to the desktop, edit [computer-aided design] drawings and transfer complex file types."

Analysts said they anticipate that the war will be protracted.

"You can expect the cost of Ethernet switches to drop below that of [regular] Ethernet hubs this year," said Eric Hindin, an analyst at The Yankee Group, a Boston consulting and research company.

"And expect to see prices drop further as other companies scramble to stay competitive," Hindin said.

PHOTO BY DON BOYER

Raging price war pleases Arizona State's Joe Askins

Bay Networks, Inc. last week joined the price war with the debut of the 2216T, a 16-port Ethernet switch priced at roughly $133 per port.

A similar product from 3Com Corp. weighs in at $120 per port, followed by Lantronix Systems, Inc.'s switch at $124 per port.

Arizona State University in Tempe is one of an army of users starting to take advantage of Ethernet switching, in part because of plummeting prices.

Joe Askins, director of data communications at the 150-building university, said the school is beginning to deploy Ethernet switches to relieve heavily used segments of an Ethernet network that supports some 17,500 users.

Askins uses LAN monitoring software from Concord Communications, Inc. in Marlboro, Mass., to measure traffic on every segment.

"If segment usage is above 15% of capacity, we'll give users switched Ethernet [links] to the desktop," Askins said. "We also look at what machines users have on their desks, what new applications they want to use and which servers they need access to."

Just two weeks ago, fast-food giant McDonald's Corp. in Oakbrook Terrace, Ill., said it has deployed more than 3,000 switched Ethernet links to desktops and sees a bright future for the LAN switching technology throughout the company.

NT users hit fragmentation snag

CONTINUED FROM PAGE 49

drive; it's an ongoing issue for Windows users. The more files you have and the more diversity you have in the size of the files, the greater the chance of disk fragmentation, wasted space and burned performance," Eunice said.

Even sophisticated Microsoft Corp. Windows NT power users are often caught unaware. Many have no idea they have a fragmentation problem until the system performance is severely degraded or the system crashes.

OPERATING SYSTEMS

And currently there is only one third-party utility — Diskeeper from Executive Software, Inc. in Glendale, Calif. — that can "defrag" the hard disk.

HARD LESSONS

Also, many users mistakenly believe the robust NTFS, which replaced the File Allocation Table (FAT) system used in other Windows versions, makes the Windows NT operating system immune to hard disk fragmentation.

Several unsuspecting Windows NT power users have found out the hard way about what happens when their hard disks are highly fragmented.

Ed Young, network manager at Utah State University's Research Foundation in Logan, said performance on his Windows NT machines was horribly slow. "It took 15 minutes to load a single graphical design drawing. Later, we found that the performance degradation was caused by our 70% disk fragmentation," he said.

Users such as Young have two options when they suspect their hard disks have become highly fragmented. They can elect to do a complete backup and restore of the disk, which is time-consuming and impractical on a regular basis, or they can use a disk defragmenter, which rearranges files on a disk so they are as contiguous as possible.

Symantec Corp. in Cupertino, Calif., also will release a new defragmentation utility, Speed Disk for Windows NT 4.0, that supports NTFS and FAT files.

A Microsoft spokesman said the company won't provide its own defragmentation utility for the Windows NT platform until after Version 5.0 ships.

Young used Executive Software's Diskeeper to solve his fragmentation problems.

"Once we installed Diskeeper, we were able to launch applications, access data and download our graphics in a fraction of the time — three minutes instead of 15 minutes," Young said.

"And we don't even know Diskeeper is on the network," Young said.

Other users had similar experiences. Rod Samuel, a senior engineer at Lockheed Martin Tactical Aircraft Systems in Fort Worth, Texas, said "We can't afford downtime — at all."

Like Young, Samuel said he was dismayed to find his systems had 70% fragmentation. "Performance noticeably improved and access times increased dramatically when we installed Diskeeper," he said.

Secure Intranet Report Distribution.

REVEAL software automatically captures corporate computer reports and builds an indexed on-line report warehouse accessible from local and remotely-connected PCs. **And our PinPoint™ page-level viewing and printing security is enforced for every user.**

REVEAL benefits:

ACTIONABLE	SCALABLE	FLEXIBLE	RELIABLE	USABLE
Desktop tools search, extract, analyze, annotate and export.	Intranet and client/server optimized architecture.	On/off-line report viewing from PCs, Browsers, Lotus Notes.	REVEAL technology is market-proven.	Turnkey, easy-to-install, easy-to-learn, automatic updating.

Available Today. REVEAL can go online immediately in your organization.

OPIN SYSTEMS
On-line Report Delivery for a Networked World.

800-888-1804
www.opin.com
Fax: 612-493-2820

We Hate To Say It, But Symmetrix Intelligent Storage Is No Longer Up To 75% Faster Than The Competition.

The New Symmetrix.

It's Up To 200% Faster, Manages 3 Times As Much Information And, By The Way, It's Better Looking, Too.

The New Symmetrix 5700

EMC invented enterprise storage, and as far as we're concerned, there's only one way to measure its performance: by direct business impact. Are you leveraging your company's information as competitively as possible? Speed is critical, always will be, but it's only one part of the whole information technology picture. Our new Symmetrix® is the smartest, most powerful solution ever. Because it's the first complete intelligent storage platform that solves today's need for total information management while laying the foundation for future advances in information-centric computing through enterprise storage.

True enterprise storage with the only proven platform that lets you manage both mainframe and open systems information simultaneously.

We've extended our performance lead to almost three times as fast as the competition.

Only storage platform capable of running intelligent software solutions such as information sharing.

Based on EMC's MOSAIC: 2000® architecture, so current Symmetrix are forward compatible.

Manages three times as much information as our previous family and is scalable from less than 100 gigabytes to 3 terabytes.

Symmetrix 5430, one of six new products.

Finally, there's a way to consolidate, protect, manage and make information instantly accessible across multiple platforms from a single storage system. Now that's true enterprise storage. Enormous quantities of information, constantly flowing in from mainframe and open platforms can now be pooled and readily accessed company-wide. Which means you can deliver the 7 x 24 availability needed for decision support, OLTP, data warehousing, and any crucial information-dependent process.

The new Symmetrix family turns industry-leading storage performance into a powerful business strategy you can have up and running now. To find out how, call EMC at 1-800-424-EMC2 ext. 378 or visit us at http://www.emc.com.

EMC²

EMC², Symmetrix, MOSAIC 2000 and THE STORAGE ARCHITECTS are registered trademarks, and EMC is a trademark of EMC Corporation. ©1997 EMC Corporation All rights reserved.

Lots of accounting software programs say they run on NT®/SQL Server.™

Anyone can say their accounting software package runs on NT/SQL Server. But that doesn't mean it'll deliver everything it should.

Introducing Acuity Financials™ — the one people are calling the industry's most powerful, flexible, scalable, full-featured accounting application going. And the only one built from the ground up solely with Microsoft's® latest tools and client/server technologies like VB® 4.0 and Component Object Model.

Which means that Acuity Financials is able to take unparalleled advantage of the power offered by SQL Server™ and Windows NT®.

So along with letting you get the most out of all Microsoft's products, tools and upgrades — and integrate all your applications under Windows® — Acuity Financials offers a remarkably fast installation time.

With Acuity Financials, you'll also get a highly-polished, user-friendly interface. Built-in Crystal Reports® and FRx®. A choice of preconfigured and fully-customizable financial management reports. And features that go far beyond what you'd expect — or find in any other product.

Like complete Internet and Intranet readiness, to let you take advantage of these emerging technologies. Full Year 2000 Compliance, so your new millennium is smooth sailing. Even several different price levels, to make sure your investment can grow with you.

Amazing, to be sure. But that's what you get with State Of The Art's 15-year heritage in designing award-winning accounting software. Not to mention the experience that went into developing our industry-leading MAS 90® accounting products.

Before you make any accounting software decision, run these numbers: 1-888-4ACUITY. Because when it comes to getting a platform designed specifically for today's NT/SQL Server, we're not just the best choice.

We're the only choice.

STATE OF THE ART
ACCOUNTING SOFTWARE

Strength in numbers.

www.sota.com. ©1997 State Of The Art, Inc. Acuity Financials, MAS 90, MAS 90 for Windows and State Of The Art, Inc. are trademarks or registered trademarks of State Of The Art, Inc. All other product names are trademarks of their respective companies.

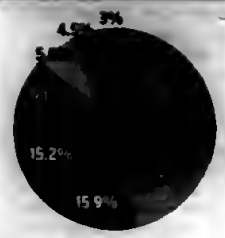
The Internet

The World Wide Web • Intranets • Online Services

Briefs

[redacted]

TODAY'S INTRANET APPLICATIONS



- Publishing internal information
- Discussions
- Line-of-business applications
- Collaboration
- Links to partners
- Links to customers
- Electronic commerce
- Other

Base: 600 IS professionals

[redacted]

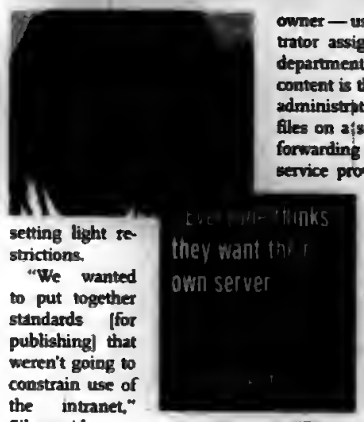
IS tries to keep insanity out of intranets

By Justin Hibbard

A LITTLE WEB knowledge is a dangerous thing. Just ask information systems managers at companies where end users manage their own intranet sites.

Those managers are learning that they must strike a balance between letting users publish freely and imposing standards that keep the network from becoming a jungle. Most companies get by with a loose set of publishing policies, but some aren't ready to give users the keys to their own World Wide Web servers.

Diane Silver, vice president of information strategies at American President Lines in Oakland, Calif., said her company has avoided intranet chaos so far by setting light restrictions.



"We wanted to put together standards [for publishing] that weren't going to constrain use of the intranet," Silver said.

All changes to the intranet at American President Lines require the approval of a content owner — usually an IS administrator assigned to a particular department or office. Approved content is then sent to a central administrator, who tests the files on a staging server before forwarding them to a remote service provider that hosts the company's content on its servers.

Silver supports decentralized content authoring, but she has resisted efforts to decentralize hosting because she fears the disorder that might ensue.

"Everyone thinks they want their own server," she said. "We're not doing that."

Users at B.C. Hydro in Vancouver, British Columbia, also wanted their own intranet servers, but the IS department beat them to the punch.

"We realized that anarchy would happen unless we were proactive in putting together a service," said Steve Whan, B.C. Hydro's corporate webmaster.

CENTRAL HOSTING

Whan's department now offers a central hosting service for departments. So far, the service has been a hit. Users are free from the work of administering a server, and IS maintains control of the network.

But posting pages to B.C. Hydro's intranet server is hardly a one-button operation. Users must first submit the content

Intranet, page 58

GROUPWARE

Outlook client short on Internet ties

By Barb Cole

USERS OF Microsoft Corp.'s Exchange who plan to move to the new Outlook E-mail and groupware client will see small improvements in Internet support. They will have to wait for future releases of Exchange and the company's Internet Explorer Web browser for tight integration with the 'net.

Outlook, Microsoft's next-generation client for Exchange, includes calendaring and scheduling. It also lets users embed links to World Wide Web sites inside those schedules to help them point colleagues to specific sites or information when they are scheduling meetings.

Outlook users, like users of the Exchange client, will be able to swap electronic mail with Internet messaging systems that use an Exchange server-based gateway. Outlook also lets users store a folder of favorite Web sites, similar to bookmarks. But Outlook users will have to wait

Outlook, page 58

HTML tools finally get serious

▸ *New versions add editing features that webmasters need*

By Mitch Wagner

AFTER YEARS of pooh-poohing graphical HTML editors as training wheels for beginners, developers are starting to put the tools to work as serious instruments for electronic commerce.

Hypertext Markup Language (HTML) editors offer speed and ease of use to help users get World Wide Web pages out quickly. But they don't do it all; users still say they need to write code by hand to take advantage of the latest Web functionality.

New tools, however, are more able to deliver WYSIWYG functionality while also allowing users to crack open the hood and make changes to the HTML code.

Tools previously fell into two classes: WYSIWYG tools that wouldn't give you an easy way to manipulate the code directly, and tools that used forms to generate HTML code but wouldn't give developers a graceful way to see what Web pages under construction would look like on the Internet.

Tools such as Adobe's PageMill help to automate the process of creating the HTML code for Web pages

The tools, which generally cost less than $200, were designed to streamline the process of developing Web pages using HTML, the language that tells Web browsers such details as where to place text on screen, how big to make the letters and where to draw graphics.

LOOK

The tools provide a vital shortcut to Web page creation. HTML tags are easy to understand but sometimes difficult to memorize. And the maze of angle brackets and pound signs is often difficult to navigate. HTML editors were designed to speed up the process by automatically generating the right HTML code based on user instructions.

"A WYSIWYG format is nice. You can work with things like tables and graphics," said Christine Eubanks, publishing specialist at Chevron Information Technology Co., the information systems arm of the petroleum giant. "If you do HTML code by hand and you're working on a

HTML tools, page 58

The Internet

The World Wide Web • Intranets • Online Services

Briefs

Flickering bandwidth

Movies-on-demand will be another bandwidth-hogging distraction on the Internet this week when the American Film Institute begins providing Hollywood classics via the World Wide Web. AFI Online Cinema debuts Wednesday with a 1916 Charlie Chaplin film at www.afionline.org/cinema.

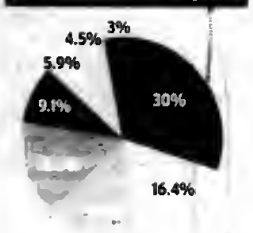
Internet babysitting

Here comes another tool to help IS managers squelch misuse of the Internet. Equitrac Corp. in Boston is beta-testing software that can block access to Web sites or newsgroups, monitor online research and track time online. Equitrac's Professional Internet Client is scheduled to ship in February or March. It will cost $99.

Boosting bandwidth

Internet service provider UUnet Technologies, Inc. plans to boost performance by buying high-end networking gear from Ascend Communications, Inc. UUnet will install 150 of Ascend's flagship Max TNT wide-area network access switches. Each switch can support 627 simultaneous data calls over a 45M bit/sec. line.

TODAY'S INTRANET APPLICATIONS



- Publishing internal information
- Discussions
- Line-of-business applications
- Collaboration
- Links to partners
- Links to customers
- Electronic commerce
- Other

Base: 600 IS professionals

Source: Delphi Consulting Group Inc., Boston

IS tries to keep insanity out of intranets

By Barb Cole

A LITTLE WEB knowledge is a dangerous thing. Just ask information systems managers at companies where end users manage their own intranet sites.

Those managers are learning that they must strike a balance between letting users publish freely and imposing standards that keep the network from becoming a jungle. Most companies get by with a loose set of publishing policies, but some aren't ready to give users the keys to their own World Wide Web servers.

Diane Silver, vice president of information strategies at American President Lines in Oakland, Calif., said her company has avoided intranet chaos so far by setting light restrictions.

"Everyone thinks they want their own server." – Diane Silver, American President Lines

"We wanted to put together standards [for publishing] that weren't going to constrain use of the intranet," Silver said.

All changes to the intranet at American President Lines require the approval of a content owner, usually an IS administrator assigned to a particular department or office. Approved content is then sent to a central administrator, who tests the files on a staging server before forwarding them to a remote service provider that hosts the company's content on its servers.

Silver supports decentralized content authoring, but she has resisted efforts to decentralize hosting because she fears the disorder that might ensue.

"Everyone thinks they want their own server," she said. "We're not doing that."

Users at B.C. Hydro in Vancouver, British Columbia, also wanted their own intranet servers, but the IS department held them to the punch.

"We realized that anarchy would happen unless we were proactive in putting together a service," said Steve Whan, B.C. Hydro's corporate webmaster.

CENTRAL HOSTING

Whan's department now offers a central hosting service for departments. So far, the service has been a hit. Users are free from the work of administering a server, and IS maintains control of the network.

But posting pages to B.C. Hydro's intranet server is hardly a one-button operation. Users must first submit the content

Intranet, page 58

GROUPWARE

Outlook client short on Internet ties

By Barb Cole

USERS OF Microsoft Corp.'s Exchange who plan to move to the new Outlook E-mail and groupware client will see small improvements in Internet support. They will have to wait for future releases of Exchange and the company's Internet Explorer Web browser for tight integration with the net.

Outlook, Microsoft's next-generation client for Exchange, includes calendaring and scheduling. It also lets users embed links to World Wide Web sites inside those schedules to help them point colleagues to specific sites or information when they are scheduling meetings.

Outlook users, like users of the Exchange client, will be able to swap electronic mail with Internet messaging systems that use an Exchange server-based gateway. Outlook also lets users store a folder of favorite Web sites similar to bookmarks. But Outlook users will have to wait

Outlook, page 58

HTML tools finally get serious

• New versions add editing features that webmasters need

By Mitch Wagner

AFTER YEARS of pooh-poohing graphical HTML editors as training wheels for beginners, developers are starting to put the tools to work as serious instruments for electronic commerce.

Hypertext Markup Language (HTML) editors offer speed and ease of use to help users get World Wide Web pages out quickly. But they don't do it all; users still say they need to write code by hand to take advantage of the latest Web functionality.

New tools, however, are innovative to deliver WYSIWYG functionality while also allowing users to crack open the hood and make changes to the HTML code.

Tools previously fell into two classes: WYSIWYG tools that wouldn't give you an easy way to manipulate the code directly, and tools that used forms to generate HTML code but wouldn't give developers a graceful way to see what Web pages under construction would look like on the Internet.

Tools such as Adobe's PageMill help to automate the process of creating the HTML code for Web pages

The tools, which generally cost less than $200, were designed to streamline the process of developing Web pages using HTML, the language that tells Web browsers such details as where to place text on screen, how big to make the letters and where to draw graphics.

CLOSER LOOK

The tools provide a vital shortcut to Web page creation. HTML tags are easy to understand but sometimes difficult to memorize. And the maze of angle brackets and pound signs is often difficult to navigate. HTML editors were designed to speed up the process by automatically generating the right HTML code based on user instructions.

"A WYSIWYG format is nice. You can work with things like tables and graphics," said Christine Tobbanks, publishing specialist at Chevron Information Technology Co., the information systems arm of the petroleum giant. "If you do HTML code by hand and you're working on a

HTML tools, page 58

Snapshot

LIAR, LIAR

Top three reasons why falsifiers do so (multiple responses allowed)

Terms and conditions of how information will be used weren't clearly specified	70%
Revealing requested information isn't worth being able to access the site	70%
Don't trust the collecting site	62%

Base: 15,000 Web users

Source: Georgia Tech Research Corp., Atlanta (www.cc.gatech.edu/gvu/user_surveys)

Outlook lacks 'net features

CONTINUED FROM PAGE 57

until later this year for Hypertext Markup Language (HTML) support, which will let them embed Web pages in messages.

"Outlook is a bit nicer than the Exchange client [in terms of Internet hooks], but the improvements are mostly cosmetic," said Erik Iversen, director of application development services at Nabisco, Inc. in Parsippany, N.J. The company will install Outlook on the desktops of 8,000 Exchange users.

Information systems managers at several of the early adopters of Exchange, including Nabisco, the Kentucky Department of Education and Texaco, Inc., said they plan to move to Outlook for its groupware hooks and integration with Microsoft's Office 97 suite.

Outlook shipped last week with Office 97 and will be bundled with Exchange 5.0 later this quarter. It will also be sold separately starting next month.

Greg Scott, IS manager at Oregon State University's College of Business in Corvallis, said the 2,500 students who use Outlook to access Exchange are able to schedule appointments via the Internet. Although that was possible with the Exchange client, users had to add extra files to their PCs because the Exchange scheduling piece was separate from the E-mail component. With Outlook, scheduling is integrated, Scott said.

Companies looking to tie their Exchange messaging servers to the Internet will rely most heavily on forthcoming server-side enhancements, Iversen said. Those include support for Lightweight Directory Access Protocol for building a Web-accessible directory, and compatibility with Network News Transport Protocol for integrating Exchange discussions with Web chats.

Down the road, Microsoft is expected to expose many of the best features in Outlook as ActiveX controls that can be layered atop Internet Explorer. That would enable users to participate in groupware applications from their Web browsers.

OUTLOOK'S 'NET HOOKS

- Lets users embed hyperlinks in schedules and E-mail messages
- Stores favorite Web sites in a folder
- Will support HTML in a later version, letting users embed Web pages in E-mail

Microsoft declined to comment on the plan, but several Exchange sites said the company has promised to do so this year. That would put Microsoft on more equal footing with Lotus Development Corp., which has announced plans to roll out Java applets that render Notes client features in Web browsers.

HTML tools

CONTINUED FROM PAGE 57

table, you can have one little code out of place and — especially if it's an elaborate table — it's difficult to figure out where you went wrong."

Chevron is beginning to use Microsoft Corp.'s FrontPage development tool. It also uses Sausage Software's HotDog.

The latest version of FrontPage lets users edit with a WYSIWYG view or change HTML code by hand when needed. Previous versions delivered the WYSIWYG view but made it difficult to manually change code.

That is important, users said, because HTML standards change so rapidly that vendors can't keep up. That forces users to write code that takes advantage of advanced features such as cascading style sheets, embedded ActiveX controls and properly run Java applets.

LAGGARDS

"They're always a generation behind the HTML we're supporting," said Patrick Naughton, senior vice president of technology at Starwave Corp. in Bellevue, Wash., which produces the ESPNet SportsZone and Mr. Showbiz Web sites.

Moreover, the WYSIWYG view is just an approximation because different browsers will interpret code in slightly different ways. That forces webmasters to tweak the code to make it look best in their favorite browsers.

It isn't just the technology that has changed; users have changed, too. Development frequently falls into the hands of business managers who don't have technical backgrounds and need the ease of use of graphical HTML editors.

HTML EDITORS

Vendor	Product	Price
Microsoft Redmond, Wash.	FrontPage	$149
Adobe Systems San Jose, Calif.	PageMill	$99
Miracle Software Potsdam, N.Y.	WebWeaver	$89
Sausage Software Doncaster, Australia	HotDog Professional	$99.95
SoftQuad Toronto	HotMetal Pro	$159

At TicketMaster Group, Inc. in West Hollywood, Calif., designers use WebWeaver, a Macintosh-based HTML editor. "Their skill set is in art or graphic design," said Bob Perkins, vice president of online services. That gives them plenty of familiarity with graphical design tools but little experience with text-based programming languages.

And even technical users who have to work quickly need tools that are easy to use.

"I do understand the technology, and I don't have the time to do all my coding by hand," said Adam Karp, online producer at Century 21 Real Estate Corp. in Parsippany, N.J.

Many advanced sites aren't producing much HTML written manually. To keep data up to date, many sites store information in a database and then put a button on their pages that can automatically generate queries.

"We don't use HTML editors much, currently," said Bill Rollinson, vice president of marketing at Internet Shopping Network in Palo Alto, Calif. "A lot of our stuff is generated on the fly, by scripts."

Managing the site

Graphical HTML editing tools are the most junior members in a family of product types designed to help automate the creative processes of building a Web site.

HTML editors let users create only one page at a time. More sophisticated tools range from those that manage the relationship among several pages to those that include project management features designed to support large sites with many programmers.

One step above HTML editors in sophistication is a set of tools to manage the relationships among the individual Web pages that make up a site. Some HTML editors, such as FrontPage, include that functionality. Other times, users must go to a specialized tool, such as NetObject, Inc.'s Fusion.

Really big sites require teams of designers and a tool such as Wallop Software, Inc.'s Build-IT or Vignette Corp.'s StoryBuilder and StoryServer to manage version control and coordinate the work of multiple users. And Microsoft is beta-testing a competing collaboration product, Visual InterDev. — Mitch Wagner

Intranet

CONTINUED FROM PAGE 57

to their department manager. Then IS managers and Whan review it. Users then upload the content to a testing server. Finally, Whan loads the files on a staging server, and custom-written scripts automatically load the content on the live server.

That process would keep the IS department at The Boeing Co. busy all day, according to Joe Meadows, Web proxy service product manager at the Seattle company. Boeing will have nearly 200,000 employees if its proposed merger with McDonnell Douglas Corp. goes through, so administering every department's intranet server would be a huge task.

Boeing's IS department has ceded control of Web servers, but it still oversees content development as much as possible. The IS staff wants to make sure that pages display in all browsers and that multimedia content doesn't suck up too much bandwidth. But the department is careful not to discourage users from developing content.

Rather, the department lets users download a kit that includes the National Center for Supercomputing Applications' Web server and a few tools for setting up an intranet site. Meadows estimates about 300 servers are dishing out pages on Boeing's intranet.

"We don't want to be enforcing a strict look and feel because there's just too much room for creativity here," Meadows said.

Decentralized hosting also lets users be creative, according to Richard Andersen, manager in the entrepreneurial consulting practice at Ernst & Young in San Jose, Calif.

"It's all about managing change and still leaving room for individual choice," Andersen said.

BRING TO COMNET FOR FREE ADMISSION TO THE EXHIBITS

February 4 – 6, 1997
Washington, D.C.
Convention Center

COMNET

Exhibit Hours:
Tuesday, February 4 • 10:00 a.m. - 5:30 p.m
Wednesday, February 5 • 10:00 a.m. - 5:30 p.m
Thursday, February 6 • 10:00 a.m. - 4:00 p.m.

This VIP Ticket entitles you to one **FREE** Admission to the ComNet '97 Exhibits and more! Redeem at the VIP Ticket Counter located in the Washington, D.C. Convention Center Lobby.

For detailed information by fax, call:
800-545-EXPO
or access the ComNet Web site:
http://www.mhm.com/comnet/

value

No photocopies accepted CWT

FREE VIP TICKET

BRING TO COMNET FOR FREE ADMISSION TO THE EXHIBITS

February 4 – 6, 1997
Washington, D.C.
Convention Center

COMNET

Exhibit Hours:
Tuesday, February 4 • 10:00 a.m. - 5:30 p.m.
Wednesday, February 5 • 10:00 a.m. - 5:30 p.m.
Thursday, February 6 • 10:00 a.m. - 4:00 p.m.

This VIP Ticket entitles you to one **FREE** Admission to the ComNet '97 Exhibits and more! Redeem at the VIP Ticket Counter located in the Washington, D.C. Convention Center Lobby.

For detailed information by fax, call:
800-545-EXPO
or access the ComNet Web site:
http://www.mhm.com/comnet/

value

No photocopies accepted CWT

FREE VIP TICKET

This FREE VIP Ticket Entitles You To All This At ComNet '97

- **FREE Admission to over 500 Exhibits**
  With hundreds of the industry's leading companies demonstrating their products, ComNet offers you the most comprehensive array of wide-area networking technology in the world
- **FREE Access to the IntraNet Village** IBM
  Stroll through the IntraNet Village sponsored by IBM and media sponsor washingtonpost.com and see Intranet hype turn into practical, real-world approaches for creating a corporate "global village" within your organization. And don't miss *Network World* and *Intranet Magazine's* open classroom in the Village
- **FREE Technology Primers outline the basics**
  The ComNet Technology Primers are designed to fill in the blanks in your primary networking education. Go in confused, come out enlightened on technologies and terminologies. These FREE sessions lay out the basics on several key topics. Broadband and Multimedia, The Internet and the Web; LAN Switching & Routing; VLANs, Wireless Data; Internetworking Principles, TCP/IP & IPv6
- **FREE Keynotes**
  It doesn't get any better than this! See **Steve Forbes,** President and CEO, Forbes, Inc.; **Frank Ingari,** Chairman, CEO and President, Shiva Corporation; **Dr. David Nagel,** President, AT&T Laboratories; **Richard E. Wiley Esq.,** Partner, Wiley, Rein & Fielding; **John Chambers,** President & CEO, Cisco Systems, Inc.; and **Timothy Berners-Lee,** Director, W3 Consortium, Massachusetts Institute of Technology.

This FREE VIP Ticket Entitles You To All This At ComNet '97

- **FREE Admission to over 500 Exhibits**
  With hundreds of the industry's leading companies demonstrating their products, ComNet offers you the most comprehensive array of wide-area networking technology in the world
- **FREE Access to the IntraNet Village** IBM
  Stroll through the IntraNet Village sponsored by IBM and media sponsor washingtonpost.com, and see intranet hype turn into practical, real-world approaches for creating a corporate "global village" within your organization. And don't miss *Network World* and *Intranet Magazine's* open classroom in the Village
- **FREE Technology Primers outline the basics**
  The ComNet Technology Primers are designed to fill in the blanks in your primary networking education. Go in confused, come out enlightened on technologies and terminologies. These FREE sessions lay out the basics on several key topics. Broadband and Multimedia, The Internet and the Web; LAN Switching & Routing; VLANs, Wireless Data; Internetworking Principles, TCP/IP &IPv6
- **FREE Keynotes**
  It doesn't get any better than this! See **Steve Forbes,** President and CEO, Forbes, Inc.; **Frank Ingari,** Chairman, CEO and President, Shiva Corporation; **Dr. David Nagel,** President, AT&T Laboratories; **Richard E. Wiley Esq.,** Partner, Wiley, Rein & Fielding; **John Chambers,** President & CEO, Cisco Systems, Inc.; and **Timothy Berners-Lee,** Director, W3 Consortium, Massachusetts Institute of Technology.

You could miss all this if you miss the ComNet '97 Conference!

Debate

The ComNet Conference presents you with the best forum to hear different perspectives from vendors and users on such hot topics as: ATM vs. IP Switching • Gigabit Ethernet vs. ATM with LANE • Microsoft NT vs. Novell Netware 5.0 • DSL Technologies vs. Cable Modems • Switching strategies of 3Com, Bay, Cabletron and Cisco.

Vision

Look into the future of communications networking with these influential and respected industry leaders as they discuss current trends and predict future sea changes in the way we live, work and communicate. **Steve Forbes,** *President and CEO of Forbes Inc. and Editor-in-Chief, Forbes Magazine,* **Frank Ingari,** *Chairman, CEO & President, Shiva Corporation;* **David Nagel,** *President, AT&T Laboratories;* **John Chambers,** *President & CEO, Cisco Systems;* and **Tim Berners-Lee,** *Director, W3 Consortium, MIT.*

STRATEGY

Get ready to hear from the experts and your peers how they are implementing technologies, policies, or tackling such critical issues as: How will you secure financial transactions over the Internet?...How can you protect corporate data?... What switching protocols are being developed for remote access environments?... What are the benefits of Intranets?... And so much more. If it's an issue you want to know about, you'll find it covered in depth at the ComNet Conference!

DIRECTION

What technology path will you follow? Will you bet on the right technologies? Will you select the right vendors? Do you know what roadblocks lie in the way? The ComNet Conference will illuminate your choices and help you choose the right direction for your company.

egister now for the ComNet '97 Conference and get in-depth coverage of every networking issue facing YOU.

Conference Pre-Registration deadline extended!* Register before January 24th and save up to $100.

COMNET®

WASHINGTON, D.C.

Exhibits: February 4-6, 1997
Conference: February 3-6, 1997
Washington, D.C. Convention Center
Renaissance Hotel • Grand Hyatt Hotel

SPONSORED BY

CMP CommunicationsWeek · Federal · washingtonpost.com · Forbes · ComputerWorld · WashingtonNet · Forbes ASAP

To register Call Now! 800·265·3585

Or, register on the ComNet Web site at: http://mha.com/comnet/

*Extended for Conference Only Pre-registration. Deadline for exhibits is January 13, 1997.

NEC ANNOUNCES A RADICAL NEW CONCEPT
TO THE WORLD OF BUSINESS COMPUTING:

BUY NOW. SAVE LATER.

THE INTEL PENTIUM® PROCESSOR WITH MMX™ TECHNOLOGY. ANOTHER WAY NEC REDUCES TOTAL COST OF OWNERSHIP OVER TIME.

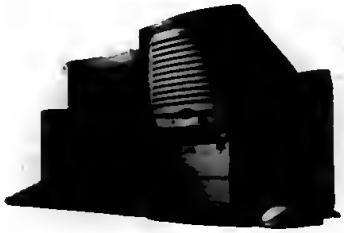
From the very moment you buy an NEC computer featuring a Pentium processor with MMX technology, you begin reaping the benefits.

Complex business applications will run 10% to 20% faster. Graphics and audio will be more powerful and realistic. And the performance of certain functions within applications written specifically for MMX technology will be increased by over 400%.*

But enhanced productivity is just one reason why you'll want to invest in MMX technology now. An even more compelling reason is to lower your total cost of ownership. By purchasing at the forefront of the technology curve, you'll not only maximize your return on investment, you'll minimize your cost of obsolescence.

That's because you'll be able to take advantage of emerging, data-intensive technologies such as video conferencing, Internet and Intranet applications, sooner, and for a longer period of time.

However, NEC computers lower the total cost of ownership in other ways as well. Take Versa® notebooks, for instance. Not only is the NEC Versa 6050 one of the first to ship with a 150MHz Pentium processor with MMX technology, it's backward compatible with your current Versa 6000 Series options. And our UltraCare® Program helps minimize the cost of service and support. What's more, the Versa 6200 Series will feature the fastest mobile Pentium processor with MMX technology (166MHz) and the largest screen (13.3") available in a notebook.



In addition to the enhanced productivity benefits of MMX technology, NEC PowerMate™ desktop systems come standard with Intel's LANDesk® Client Manager and NEC MagicEye™ Technology. Which, by simplifying remote management and increasing fault prevention, lower the total cost of ownership in other ways. Namely, by reducing overall system downtime.

So look at it this way: The sooner you buy an NEC computer, the sooner you can start saving money. Now if that's not a radical concept, what is?

intel inside pentium®

Call your authorized NEC reseller for immediate delivery. Or, for more information on how NEC computers can lower your total cost of ownership, call 1-800-NEC-INFO and reference "TCO".

SEE, HEAR AND FEEL THE DIFFERENCE.™

NEC

©1997 NEC Computer Systems Division, a division of Packard Bell NEC, Inc. UltraCare is a registered service mark, Versa is a US registered trademark and PowerMate, MagicEye and "See, Hear and Feel the Difference" are trademarks of NEC Technologies, Inc. NEC is a registered trademark of NEC Corporation. All are used under license by Packard Bell NEC, Inc. The Intel Inside logo, Pentium and LANDesk are registered trademarks and MMX is a trademark of Intel Corporation. All other marks are property of their respective owners. Immediate delivery may not be available on all models. *Source: Image Processing component of Intel Media Benchmark for Windows® 95

EXECUTIVE

TECHNOLOGY

SUMMIT'97

The 1997 Executive Technology Summit

Harvesting Your IT Investments

The fourth annual Executive Technology Summit is being presented by SIM and Computerworld, to offer attendees more insight into the ever changing world of information technology. This unique program includes:

Powerful Keynote Sessions

Kicking off ETS '97 is John Cross, General Manager of IT for British Petroleum PLC. Cross discusses the "Transformation of the IT Function at British Petroleum" as they moved from a mainframe VMS environment to client/server. A special Integrator keynote has been added to the program this year, featuring John Singel, National Integrated Technology Domain Leader of Price Waterhouse. The closing keynote is provided by Naomi Seligman, Senior Partner of the Research Board, who covers some of the data collected by her extensive organizational research.

John Cross
British Petroleum

John Singel
Price Waterhouse

Naomi Seligman
Research Board

Technology Provider Strategy Panels

Here is your chance to hear from a senior level IT executive from an ETS sponsor company in a moderated panel format. Corporate strategies and future directions are revealed, as well as answers to questions about new technologies and emerging trends.

And with this year's ETS conference will be hosted by our Master of Ceremonies, Scott Shuster, Founding Editorial Director, Business Week Conference Programs.

Solution Labs

See for yourself, the latest technology solutions from today's top IT vendors. Leading suppliers share their vision and expertise. In these small, highly interactive educational forums, explore specific solutions to the issues facing you and your organization.

Technology Panels

The following three, 60-minute case-study panels made up of senior IT executives, discuss technology applications and implementation, including performance expectations, scope, process and return on investment.

Distributed Computing

Moderated by: Alan Alper
Editor, Magazines Group *Computerworld*

The following issues and more will be discussed to help you separate promises from reality and to effectively estimate the impact on your resources:

- migration of existing systems
- increased need for object-oriented development
- systems management procedures
- user file management and related fundamental security issues
- adequate hardware and software componentry
- language standards and interoperability

Data Mining and Data Warehousing

Moderated by: Alan Paller
Director, Research and Education
Data Warehousing Institute

Here are just a few of the many questions, you'll get answers on:

- what kind of infrastructure is necessary to support the amount of data that will be stored and processed?
- do I need a relational database or multidimensional database?
- what set of tools will most appropriately support end-user needs?
- what are the real capabilities, the relative costs and the return?
- search engine, text retrieval engine and sort processing options

Doing Business with Internet Technologies

Moderated by: Gay Slesinger
Vice President
Giga Information Group

This is your opportunity to discuss solutions on:

- choice of architecture
- security and standards issues
- capitalization of the Internet for intranet purposes
- planning for effective use of the Internet beyond the year 2000

For more information or to register for ETS '97, call 1-800-464-0061 today! Or visit our website at www.computerworld.com or SIM's website at www.simnet.org.

©1997 All other company or product names are trademarks or registered trademarks of their respective holders.

NEW PRODUCTS

DYNALAB, INC. has announced GlobalSurf, a multilingual communications tool for Internet users.

According to the Santa Clara, Calif., company, the software lets users explore the Internet in 23 languages. It is being distributed electronically in the U.S. by CyberSource Corp.

GlobalSurf costs $99.

DynaLab
(408) 490-4224
www.dynalab.com

FLAT CONNECTIONS has announced Sumba, the first in a series of Flatware products to enhance the speed and security of Web-based communications.

According to the Fremont, Calif., company, Sumba provides a personal firewall that delivers encryption, highly secure electronic mail and real-time virus checking for Internet communications. It includes Java processor-based software that splits the security and antivirus processing tasks between the PC's CPU and the Java coprocessor.

Sumba costs $349.

Flat Connections
(510) 249-9777
www.flatconnect.com

CLARITY SOFTWARE, INC. has announced MagicFax, software for the Web that sends faxes anywhere in the world for free.

According to the Mountain View, Calif., company, MagicFax routes a fax to the MagicFax Web Server that is closest to the recipient to avoid long-distance charges.

The software can be downloaded for free at www.magicfax.com.

Clarity Software
(415) 964-4683
www.magicfax.com

TYMPANI DEVELOPMENT, INC. has announced NetAttache Enterprise Solution, a Windows NT-based software package to simplify the gathering and dissemination of Web data over corporate intranets.

According to the Sunnyvale, Calif., company, the system allows organizations to easily update needed data from frequently visited Web sites.

The product costs $750 for 10 seats.

Tympani Development
(408) 735-9555
www.tympani.com

AMZI, INC. has announced WebLS 2.0, a tool for embedding rules-based expertise in Web pages.

According to the Stow, Mass., company, WebLS 2.0 includes a class of application known as the product or service adviser. The applications gather information from the user through Web pages and then make product or service recommendations such as for a new car or career opportunity.

A freeware version is available at www.amzi.com

Amzi
(508) 897-7332
www.amzi.com

INTERSE CORP. has announced Interse Market Focus 3.0, a new version of the software for integrating, managing and examining Internet user behavior data.

According to the Sunnyvale, Calif., company, new features include a Metadata module for comparing site usage data with other data to provide a comprehensive visitor profile.

Developers' editions start at $3,495 for the Microsoft Corp. Access-compatible edition.

Interse
(408) 732-0932
www.interse.com

SARATOGA SYSTEMS, INC. has introduced SPS WebPort, a World Wide Web interface capability for the company's SPS, a sales automation system.

According to the Campbell, Calif., company, SPS WebPort links the corporate sales process with the Web. Hypertext Markup Language-based online forms can be customized with color, logos and other graphics.

SPS WebPort costs $4,900 as an add-on module.

Saratoga Systems
(408) 371-9330
www.saratogasystems.com

Computerworld Custom Publications

White Papers

With an in-depth focus on a major technology platform or technology management issue, Computerworld White Papers are highly regarded by information systems professionals

Custom Supplements

Technology briefings that provide strategic direction for the busy IT manager

Technology Roadmaps

Infographic reference guides to the design and implementation of critical technology platforms

Look for These Upcoming Custom Publications in Computerworld

Issue Date	Title	Space Close	Materials Due
Mar. 10	White Paper: Securing the 'Net...and Your Sanity Distribution at Internet World	Jan 24	Feb. 14
Mar. 31	Solutions Series: Year 2000: Organizational Issues (part 1 of 2)	Feb. 14	Mar. 7
Apr. 21	White Paper: Data Mining Leverages Warehouse Info	Mar. 7	Mar. 28
May 5	Supplement: Electronic Software Distribution Distribution at Networld + Interop	Mar. 21	Apr. 11
May 12	White Paper: Evolution of Systems Management Distribution at DB/EXPO	Mar. 28	Apr. 18

Computerworld Custom Publications are written and produced independently of the Computerworld editorial staff.

To order back issues, contact Heidi Broadley at (508) 820-8536

COMPUTERWORLD

SEND AND RECEIVE MESSAGES.

THERE'S e MAIL.

Novell.
Everything's Connected.

GroupWise

AND NOW THERE'S G MAIL.

SEND AND RECEIVE MESSAGES, FAXES, VOICE MAIL, PAGER MESSAGES, INTERNET, INTRANET, CALENDAR, REMOTE ACCESS, CONFERENCE CALLS, WORKFLOW MANAGEMENT, DOCUMENT MANAGEMENT AND UNIVERSAL MAILBOX.

When a once-in-a-lifetime opportunity comes along, take it — come to ACM97

THE NEXT 50 YEARS OF COMPUTING

*Conference and Exposition, **March 1 - 5, 1997**, San Jose, California, USA*

SHARE VIEWS WITH THE INVITED PLENARY SPEAKERS AT THE CONFERENCE (MARCH 3 - 5, 1997):

- Gordon Bell
- Joel Birnbaum
- James Burke (emcee)
- Vinton Cerf
- Bran Ferren
- Fernando Flores
- Albert Gore (invited)
- Brenda Laurel
- Pattie Maes
- Carver Mead
- Nathan Myhrvold
- William Perry
- Raj Reddy
- Elliot Soloway
- Bruce Sterling

EXPLORE BEYOND STATE-OF-THE-ART COMPUTER TECHNOLOGIES AT THE EXPO (MARCH 1 - 4, 1997), AT BOOTHS FROM THE ACM97 UNDERWRITERS AND THE FOLLOWING:

- ACM SIGGRAPH Animation Theatre
- Air Force Institute of Technology
- Aizu University (Japan)
- ART+COM (Germany)
- ATR Media Integration and Communication Research Laboratories
- Boeing
- Brown University
- Carnegie-Mellon University
- Cinematrix
- Columbia University
- East Carolina University
- Electronic Visualization Laboratory, University of Illinois-Chicago
- Fraunhofer Center for Research in Computer Graphics and The Institute of Computer Graphics
- Gigalabs
- IBM Research
- Institute of System Science, National University of Singapore
- Johns Hopkins University
- The Lightspan Partnership
- Matsushita Electric Works (Japan)
- MIT
- MIT Media Lab
- ModelLogic
- NASA and George Mason University
- Ohio State University
- Pohang University of Science & Technology (Korea)
- Simon Fraser University
- 3D Technology Labs
- Twente University (Netherlands)
- University of California, Berkeley
- UCLA

FOR ACM97 INFORMATION AND REGISTRATION:

ONLINE: WWW.ACM.ORG/ACM97
PHONE: 1-800-342-6626 (US & CANADA), +1-212-626-0500 (WORLDWIDE)
EMAIL: ACM97INFO@ACM.ORG
FAX: +1-212-944-1318

ACM97 UNDERWRITERS

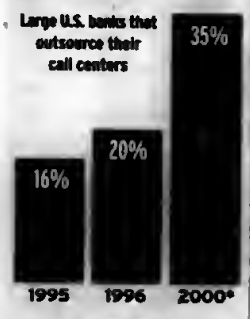
COMPUTERWORLD — Everything you need to know
HEWLETT PACKARD
intel. The Computer Inside.
Microsoft
Sun microsystems

Corporate Strategies

Case Studies • Trends • Outsourcing

Briefs

YOU CAN BANK ON IT



Base: 360 banks with more than $1 billion in deposits

* Projected

Source: [illegible]

IT spending rises

The need to stay [illegible] drove up information technology spending from $213 billion in 1995 to $298 billion in 1996, according to market research firm Dataquest in San Jose, Calif.

Utility sets up on Web

Carolina Power & Light has selected NetCon SI in Irvine, Calif., to give its employees Internet access to the Raleigh, N.C.-based utility's human resources and financial information. Under a project called PeopleNet, NetCon will connect the utility's 100 locations in North Carolina and South Carolina through a set of client/server-based World Wide Web objects to the utility's PeopleSoft Corp. human resources applications.

ADP/AIM deal

Automatic Data Processing, Inc. (ADP) in Roseland, N.J., has formed a marketing alliance with Advanced Information Management, Inc. (AIM) in Santa Barbara, Calif. AIM's career planning software, HR Horizons, will be combined with ADP's human resources management system, CSS Hilliam. HR Horizons' features, such as succession planning, career development, skills and competency management, will be meshed with CSS Hilliam's human resources planning capabilities.

They'll do anything to lure tech talent

By Julia King

AMY NAPLES was browsing around a Barnes & Noble bookstore in Princeton, N.J., when she noticed a knot of young meo flipping through Java and C++ books in the computer section.

RECRUITING SCHEMES

Naples did what any good technical recruiter would do. She passed out plenty of business cards and chatted up open software developer positions at her employer, Bluestone Software, Inc. in Mount Laurel, N.J.

"It's just become part of my life. There isn't a technical person I meet who I don't ask whether they know of another high-level technical person looking for a job," Naples said. "I've even taken to putting my cards in books."

Naples isn't alone. In today's excruciatingly tight information systems job market, recruiters will do just about anything to drum up prospects and ultimately reel in technical talent.

GIVE 'EM THE WORLD

It isn't at all uncommon for headhunters and company recruiters to offer prospects everything from free lunches to signing bonuses of $10,000 and

Bounty, page 68

Amy Naples [illegible] technical pro[illegible]

Tribune Co. trains 'net pros in-house

Tribune Co.'s Jeff Scherb

By Julia King

WITH NO END in sight to the IS skills crunch, some companies are finding new ways around it.

One is The Tribune Co., where finding technically savvy Internet developers with keen creative skills has been one of the biggest problems.

> "We have lots and lots of creative people. The key is getting them comfortable working in this medium."

The Chicago-based publishing and broadcasting company has stopped looking for information systems skills solely in the open market.

Instead, it is training its staff of print artists and page designers in Hypertext Markup Language (HTML) and other Internet skills.

"Rather than take the approach of looking for a few qualified people to get projects done, everybody in the company has to be able to have some competency in electronic publishing," said Jeff Scherb, senior vice president and chief technology officer at the company.

In the past two months, Tribune staffers from various departments have published more than 100 pages on the company's TribTech World Wide Web site. The in-house site showcases employees' electronic publishing projects and gives workers a place to practice their HTML skills.

It also is used as an intranet for Tribune employees to share information about Web-based projects at the company.

Tribune, page 68

CLIENT/SERVER SHIFT

Maine drives Medicaid reform with decision-support system

By Thomas Hoffman

THE STATE OF MAINE is throwing information technology — $5 millioo worth in little more than a year — at the problem of rising Medicaid costs, a long-time budget-buster for states across the nation.

Maine has invested in new client/server administrative systems, including a decision-support system to be implemented next month, to support the state's shift to a managed health care model.

Instead of processing individual claims from elderly and poor citizens covered by Medicaid, Maine wants to cut waste and fraud by tracking patients' health and seeking ways to prevent costly illnesses before they occur.

Maine's systems are expected to help the state reduce its Medicaid costs by $3.5 million annually starting this year, said Jim Gorman, deputy director of Maine's Bureau of Medical Services in Augusta.

Jim Gorman

Capitation and decision-support systems may help Maine reduce Medicaid expenditures

Like other states around the U.S., Maine is under intense financial pressure to shift its Medicaid program to a managed care model for its 160,000 recipients. The state's Medicaid costs account for one-fourth of the state's $1.1 billion medical services expenditures, and those costs have been spiraling upward at 15% per year since the early 1990s.

The cost-savings from the new systems will be achieved partly by providing administrators easier access to infor-

Maine, page 68

IS bounty hunters dig deep to draw technical talent into the fold

CONTINUED FROM PAGE 67

more. For employees who refer qualified friends and family members for interviews, there are dinners at fine restaurants, theater tickets and referral bonuses — sometimes in the thousands of dollars.

The U.S. Department of Labor is projecting a 90% growth in jobs for systems analysts and computer engineers between 1995 and 2005.

Meanwhile, colleges and universities are graduating 42% fewer computer science majors.

And new technologies are being introduced at warp speed, which is only exacerbating the skills crunch.

In 1996, software companies increased their employee base by an average of 34%, according to a Coopers & Lybrand survey of 500 firms. The average salary increase was 8%.

"Just throwing an ad in the paper now is not cutting it," said Ken Lieberman, a recruiter at GEC-Marconi Hazeltine, a defense contracting firm in Wayne, N.J.

As a result, the firm advertises on the Internet, recruits at job fairs and is considering running radio spots at a cost of about $2,000 for a 30-second announcement.

Software engineers who join GEC-Marconi get a signing bonus of between $5,000 and $10,000, which they receive "when they walk through the door," Lieberman said.

SEEK THEM OUT

Sanchez Computer Associates, Inc. in Malvern, Pa., is encouraging job candidates who frequent Flanigan's Boat House — a restaurant in a nearby technology-oriented corporate center — to "steal this coaster, and win a free lunch."

The restaurant later this month will use bar coasters that advertise technical jobs at Sanchez, a banking services software firm.

Flanigan's is patronized mostly by young people who work at the corporate center. Qualified candidates who bring a coaster to an interview at Sanchez will receive a certificate for a free meal.

Sanchez currently is looking for 20 to 25 programmers, said Debbie Mikulak, vice president of human resources at the company.

Hank Delavati, chief information officer at Quantum Corp., a disk manufacturer in Milpitas, Calif., advertises in the newspapers and on the Internet and, less frequently, hires an outside agency to recruit qualified IS workers.

"Their fee is usually higher, but when you really need someone for a project, you've got to pay what you've got to pay," he said.

FINDERS' FEES

Delavati also just increased the bonus — from $1,000 to $5,000 — that Quantum pays employees for referring qualified IS professionals who come to work at the company.

"My personal experience is that bonuses don't encourage job-hopping," Delavati said.

Still, he said, "My highest priority is not just acquiring employees, but retaining them with good job content and training. From my perspective, shame on me if I were losing people just because a friend of theirs gets a couple of thousand dollars to recruit them [for] another company."

Still, recruiters will try — anytime and anywhere — to win new hires.

Gerry Hussey and Michael White, both recruiters at Sapient Corp. in Cambridge, Mass., were out with dates at an Arnold Schwarzenegger movie when they spotted a guy in a Sybase T-shirt sitting a few rows in front of them.

They immediately went to work on recruiting him for the systems integration firm.

"As a recruiter, you have to turn every rock over. You can't rely on a single source," Hussey said.

Panel urges free telecom trade

By Marc Ferranti
NEW YORK

BY TURNS PLEADING and threatening, industry and government advisers from around the globe are seeking to put World Trade Organization (WTO) negotiators on the path to a successful conclusion in their telecommunications talks.

WTO telecom talks reopened last week. Talks were suspended last April when some countries declined to put offers on the table and negotiators from the most industrialized countries reached an impasse on issues related to national-market access for foreign companies. The new deadline for the talks is Feb. 15.

Massive private investments are needed to build the telecom infrastructure for networks such as the Internet that form the underpinnings of today's global economy, according to a panel of private sector leaders and representatives from developing countries that convened last week. But companies won't invest without an agreement that lays down the rules for a stable, open global market, the panelists said.

"The opening of the markets in telecommunications should produce a springboard for the rest of the revolution to occur, which is the global information revolution," said Bowman Cutter, managing director of investment firm E. M. Warburg, Pincus and Co.

The investment required to upgrade global networks and create infrastructure in developing countries is estimated to be between $200 billion and $300 billion, Bowman said.

Ferranti is an IDG News Service correspondent in New York.

Maine

CONTINUED FROM PAGE 67

mation about Medicaid recipients. Administrators can use that information to identify preventable health problems, such as determining whether a pregnant Medicaid recipient is a smoker, thereby placing unnecessary risks on herself and her unborn child.

The systems are also expected to help the state reduce fraudulent practices such as "doc-shopping," in which some Medicaid recipients intentionally visit several doctors for the same condition to fill multiple prescriptions.

CENTRAL DATABASE

Thanks to a new online point-of-sale pharmacy system, all prescription information will be stored in an online database for Maine's pharmacists, physicians and administrators to monitor.

Gorman said estimates show that waste and abuse in U.S. health care account for roughly 10% to 15% of the nation's total health care bill. For Maine, that translates into $100 million in fraud that the state can potentially eliminate, he said.

Gorman, who oversees the supporting technology initiative, said his biggest challenge has been finding distributed systems technicians who will work for less money than they can get in the private sector.

JOB OPENINGS

Gorman has already hired a team leader and a Unix systems administrator. But he's still eight people short of filling his distributed systems staff, which includes openings for a Visual Basic programmer and two middleware specialists — one who is fluent in Object Management Group's Common Object Request Broker Architecture and one who knows BEA Systems, Inc.'s Tuxedo.

CLIENT/SERVER SYSTEMS

"If you want a nice place to live and work, it's a lifestyle choice," said Gorman, who along with the rest of his 19-person information systems staff works in Augusta. "But the government doesn't pay as much as the private sector, so we're still having trouble finding people," he said.

Gorman and his staff have managed to keep the technology project on course by hiring Cambridge, Mass.-based Sapient Corp. and Hewlett-Packard Co. to help with the hardware and software installations.

The software, which Maine officials developed with Sapient, includes a Unix-based client/server system called the Maine Managed Care Enrollment and Capitation System (MECAPS). MECAPS, which went live last July, was designed to help 80 health benefits advisers at the Bureau of Medical Services enroll Medicaid recipients into health maintenance organizations and monitor and update their Medicaid eligibility.

So far, the state has enrolled 15,000 Medicaid recipients into the state-run Primecare managed care program. Officials plan to have all the state's Medicaid recipients enrolled in managed care by 2000, Gorman said.

That goal is a stiff challenge for Maine and other states that are struggling to reform their Medicaid programs. Most Medicaid recipients aren't familiar with managed care, "so there's a lot of work [for the states] to get recipients to sign up and understand the new policies and procedures that it brings," said Jane Metzger, a consultant at First Consulting Group, Inc. in Waltham, Mass.

Tribune Co. grows its own

CONTINUED FROM PAGE 67

The site is managed by webmaster Jackie Harn, who until a few months ago worked at the company exclusively as an administrative assistant.

"HTML training is what I took," Harn said. "Plus, I'm surrounded by a lot of people who know a lot. Every day is a learning experience, and technology is definitely the hot place to be."

As webmaster, Harn is responsible for putting up new HTML pages on the site and overseeing its general content.

"We want to get to a point where people don't think twice about Web publishing. We have a lot of awards for graphic design. We're trying to get these people immersed in this, as well as on the theory that those skills are transferable," Scherb said.

"As a newspaper and as a broadcasting company, we have lots and lots of creative people. The key is getting them comfortable working in this medium," he said.

The more things change . . .
The business pendulum may swing, but the corporate view of IS always remains the same, Peter Keen writes. Page 76

Managing

OPERATION 2000

By [redacted]eier

How do you organize your year 2000 project? Create a central office that can act as coach, manager, motivator and cheerleader, IS executives say.

Big Brother, phone home. We need you.

That's what IS executives are saying as they organize their year 2000 projects. Without a powerful, knowledgeable and nosy program-management office, the critical work of converting applications so they can distinguish between the years 1900 and 2000 could founder and take your career with it.

The problem isn't that year 2000 work requires exotic new project management skills. It's that the work demands more of the traditional project management skills than most information systems managers have. Observers say that's why it's so important to concentrate the money, expertise and clout in one strong program-management office, which can then advise and coordinate individual project managers.

"It's a very, very demanding, time-boxed project that has thousands of variables," says Bob Adkinson, director of computer services at Dayton Hudson Corp. in Minneapolis. "You need a project manager who can handle lots of stress and pressure, who can handle 24-by-7 [all day, every day] project management and resolve conflicts."

For example, "one large airline is looking for 500 people to do their year 2000 conversion," says Richard Saulsgiver, a senior technical manager at Computer Management Consultants, Inc., a consulting firm in Tampa, Fla. "How many project managers do you know, other than CEOs or CIOs, who have ever managed more than 50 or 100 people?"

Many IS managers fail in basic project management skills

Operation 2000, page 70

Rick Hunter and Katherine Schrup are key players in the year 2000 conversion project at Kaiser Permanente Northern California

2000

CONTINUED FROM PAGE 69

such as tracking the actual start and finish dates of tasks to identify problems before they balloon out of control, says Laura Leitzinger, a senior manager at Deloitte & Touche Consulting Group in Chicago.

HIGHLY KNOWLEDGEABLE

Rick Hunter, a project manager at Kaiser Permanente Northern California, is about halfway through the conversion of about 75 million lines of code. Hunter's staff, part of the IS organization at the health maintenance organization, is doing the work itself rather than leaving it up to each business unit. "It's important to quickly come up with a set of standards and a methodology ... so that each time you go through it, you're doing the same thing, the changes are uniform throughout your application suite and they integrate with each other," he says.

Centralize this under one IS executive, Adkinson recommends. If you turn your entire IS staff into a year 2000 team, the best project and the only project they do will have errors and bugs in it. The fewer players you have learning how to do the work, the higher the quality at the end of the project.

Having started in mid-1994, Adkinson is finishing year 2000 work for Dayton Hudson's 700-plus Target stores. He says he hopes he can avoid similar conversion efforts for Dayton Hudson's namesake department stores and its Mervyn's stores by developing common applications for all three divisions.

The people closest to the applications have to do the actual conversion work, says Bruce Hall, a research director at Gartner Group Inc. in Westboro, Mass. "What you can centralize is enterprise-wide reporting, coordination, dealing with vendors, dealing with partners, reporting to management, and collecting and redistributing year 2000 tools and processes. Those range from a central clearinghouse for off-the-shelf software that is year 2000-compliant to detailed compliance specifications and tests."

HIGHLY VISIBLE

Like Big Brother, a year 2000 program office has to be constantly visible, drumming home the message to top managers and everyone else that the work is as important as short-term strategic projects, says Leitzinger.

Pressure to divert people or money from year 2000 work is an ever-present threat, she says, when companies have signed year 2000 contracts with customers. One example is Yellow Technologies Services, the IS arm of $5 billion trucking company Yellow Corp. in Overland Park, Kan.

The year 2000 activities are being treated as an under-the-cover, backroom sort of necessary conversion activity, says Jim Gillespie, project manager at Yellow Technology Services. At the same time, customers still do call IS projects that are actually going to add functionality and value to their enterprise and top IS.

Even though Yellow Technology Services has contracted with Synthé Inc. and Andersen Consulting to convert approximately 15 million lines of Cobol and assembler code, Gillespie predicts his biggest headache will be juggling year 2000 work with higher payback projects.

Gillespie stays highly visible. He holds a monthly year 2000 steering committee meeting where he reviews the company's master conversion plan with senior business managers. Every other month, he does the same for the whole year 2000 team, or IS staff.

In Phoenix, Stan Price, the city's former year 2000 project manager, had to make the same presentation twice to the same IS managers to get their backing for year 2000 funds. There was quite a bit of denial ... as to the extent and depth of the problem," says Price, who now heads year 2000 work at the Arizona Department of Revenue. "It was scary," he says, because "you can't afford to let time run out on this project, so you had to be successful. And yet, there was a lot of skepticism to deal with, among the people who hold the keys to your kingdom, as far as the budget is concerned."

HIGHLY NOSY

Part of being a good year 2000 project manager is "being an investigative reporter," Leitzinger says. That means looking for things that don't look or feel right, digging to get to the root of the issue and bringing other folks in to fix it.

Katherine Schrup, a project coordinator at Kaiser, hunted down all the development support people who would need to coordinate year 2000 work. "It's always better to over-communicate than to under-communicate," she says.

For Schrup, over-communicating extends to sending informational memos and electronic mail even to managers she doesn't think are affected. "Sometimes she says, they'll pass messages on to other managers, and ... I discover there's this whole new business going on we didn't know about. And by golly, we need to keep them in the loop."

FINDING BIG BROTHER

As Clint Eastwood said, a man has to know his limitations. One thing we see consistently is the best technical managers don't necessarily make the best project managers," says Mark Wakelin, vice president at The Cornell Group Inc., a management consulting firm in Elmwood Park, N.J.

If an IS manager knows he lacks the skills to manage a year 2000 project, Adkinson recommends seeking help. Huddle with your top IS talent, explain the skills needed to solve this mission-critical problem and "look real seriously at doing some transfers or some job swapping," he says. "If you can't be Big Brother, you'll find someone who can."

Schwartz is Computerworld's senior editor, management.

Voice for the millennium

[illegible] project needs someone who can keep the [illegible] open, even when everything hits the fan. [illegible] Permanente Northern California, that person is Katherine Schrup.

Communications specialist Katherine Schrup doesn't design networks or write Cobol code. She's a schmoozer, a deal-maker and a shameless marketeer.

But she fills a vital role in the year 2000 effort at Kaiser Permanente. "In our company, just trying to identify whom to communicate with is a real issue," says project manager Rick Hunter, to whom Schrup reports. "If a project manager tries to take that on themselves, they will fail, because there's just too many other demands."

Schrup calls her job "working with ... the people at the data center, who are on the front line ... to make their jobs as easy as possible." Actually, she makes their jobs harder by making them do year 2000 work when they're overloaded with other projects.

She softens the blow by warning groups of IS staff of the workload months before it hits. After her briefings, she says, the IS staffers sit "shaking their heads and saying, 'Oh my God, thank you for telling us about this in advance.'"

David Clark, supervisor of change management at Kaiser's data center in Walnut Creek, Calif., says he is glad Schrup is on the job. Twice a month, he coordinates the release of 300 maintenance changes and enhancements in Kaiser's applications. Schrup's year 2000 work adds 100 to 200 changes, but she helps, Clark says, by "making sure that every detail is brought into the plan ... so everybody involved is making the proper changes in all the affected areas at the same time."

That's no small task, with year 2000 dependencies woven through applications in complex and hard-to-trace ways. Schrup tracks deadlines to avoid bottlenecks in the conversion and testing through status reports, telephone calls and electronic mail. She also keeps managers in the loop so they can apply pressure if their employees push aside year 2000 work for other projects.

Schrup

DEREK BRYDON/IDG

When someone slips up, Schrup goes into damage-control mode. In August 1994, during the final week of testing changes in a management reporting system, several users suddenly acknowledged that they hadn't reviewed the test criteria and data. Schrup persuaded a database administrator to make last-minute tweaks to the test data so the users could squeeze in their testing. Schrup says she had "mud all over my face" because the database administrator was "already up to her ears, working till 11 most nights to meet our deadline."

Making peace in such situations isn't a job for a perfectionist programmer. It takes patience, empathy and knowing when to stop by to shoot the breeze. "If I only go down there when I have a problem, they're going to dread seeing me," Schrup says. "You've got to maintain the rapport."

That includes giving everyone "a sense of accomplishment and closure," Clark says. Translation: "She throws a good party at the end," he laughs. – Robert L. Scheier

OPERATION 2000

CONTINUED FROM PAGE 69

such as tracking the actual start and finish dates of tasks to identify problems before they balloon out of control, says Laura Leitzinger, a senior manager at Deloitte & Touche Consulting Group in Chicago.

HIGHLY KNOWLEDGEABLE

Rick Hunter, a project manager at Kaiser Permanente Northern California, is about halfway through the conversion of about 15 million lines of code. Hunter's staff, part of the IS organization at the health maintenance organization, is doing the work itself rather than leaving it up to each business unit. "It's important to quickly come up with a set of [standards and a methodology] . . . so that each time you go through it, you're doing the same thing, the changes are uniform throughout your application suite and they'll integrate with each other," he says.

"Centralize this under one IS executive," Adkinson recommends. "If you turn your entire IS staff into a year 2000 [team], the first project and the only project they do will have errors and bugs in it. The fewer players you have [learning how to do the work], the higher the quality at the end of the project."

Having started in mid-1994, Adkinson is finishing year 2000 work for Dayton Hudson's 700-plus Target stores. He says he hopes he can avoid similar conversion efforts for Dayton Hudson's namesake department stores and its Mervyn's stores by developing common applications for all three divisions.

"The people closest to the applications have to do the [actual conversion] work," says Bruce Hall, a research director at Gartner Group, Inc. in Westboro, Mass. "What you can centralize is enterprise-wide reporting, coordination, dealing with vendors, dealing with partners, reporting to management" and collecting and redistributing year 2000 tools and processes. Those range from a central clearinghouse for off-the-shelf software that is year 2000-compliant to detailed compliance specifications and tests.

HIGHLY VISIBLE

Like Big Brother, a year 2000 program office has to be constantly visible, drumming home the message to top managers and everyone else that the work is as important as short-term strategic projects (see story at right).

Pressure to divert people or money from year 2000 work is an ever-present threat, even when companies have signed year 2000 contracts with outsourcers. One example is Yellow Technology Services, the IS arm of $3 billion trucking company Yellow Corp. in Overland Park, Kan.

"The year 2000 activities are being viewed as an under-the-cover, backroom type of necessary conversion activity," says Jim Gillespie, project manager at Yellow Technology Services. At the same time, customers still demand IS projects "that are actually going to add functionality and value to them in 1997 and 1998."

Even though Yellow Technology Services has contracted with Syntel, Inc. and Andersen Consulting to convert approximately 15 million lines of Cobol and assembler code, Gillespie predicts his biggest headache will be juggling year 2000 work with higher-payback projects.

Gillespie stays highly visible; he holds a monthly year 2000 steering committee meeting where he reviews the company's master conversion plan with senior business managers. Every other month, he does the same for the whole 400-member IS staff.

In Phoenix, Stan Price, the city's former year 2000 project manager, had to make the same presentation twice to the same IS managers to get their backing for year 2000 funds. "There was quite a bit of denial . . . as to the extent and depth of the problem," says Price, who now heads year 2000 work at the Arizona Department of Revenue. "It was scary," he says, because "you can't afford to let time run out on this project, so you had to be successful. And yet, there was a lot of skepticism to deal with [among] the people who hold the key to your future, as far as the budget is concerned."

HIGHLY NOSY

Part of being a good year 2000 project manager is "being an investigative reporter," Leitzinger says. That means looking for things that don't look or feel right, "digging to get to the root of the issue and bringing other folks in" to fix it.

Katherine Schrup, a project coordinator at Kaiser, hunted down all the development support people who would need to coordinate year 2000 work. "It's always better to overcommunicate than to undercommunicate," she says.

For Schrup, overcommunicating extends to sending informational memos and electronic mail, even to managers she doesn't think are affected. Sometimes, she says, they'll pass messages on to other managers and, "I discover there's this whole new business going on we didn't know about. And by golly, we need to keep them in the loop."

FINDING BIG BROTHER

As Clint Eastwood said, a man has to know his limitations. "One thing we see consistently is the best technical managers don't necessarily make the best project managers," says Mark Wakelin, a vice president at The Constell Group, Inc., a management consulting firm in Elmwood Park, N.J.

If an IS manager knows he lacks the skills to manage a year 2000 project, Adkinson recommends seeking help. Huddle with your top IS talent, explain the skills needed to solve this mission-critical problem and "look real seriously at doing some transfers [or] some job swapping," he says. If you can't be Big Brother yourself, find someone who can be.

Scheier is Computerworld's senior editor, management.

Welcome to the New Dimension in Data Discovery

SAS Institute Introduces the First Integrated Data Warehousing and OLAP Solution

Featuring a Powerful Data Server and Easy-to-Use Data Browser

With SAS Institute's new client server OLAP solution, you can reach through your massive data stores to **visualize detail data on any aspect of your business.** It's never been easier to **spot trends, generate forecasts,** and **gain a greater understanding** of your customers, competitors, or current business direction.

Our new multidimensional database includes an **integrated data server and browser...** plus a viewer for surfacing that data right on your desktop. And it's at the core of SAS Institute's OLAP solution—which is fully integrated with the award-winning SAS® Data Warehouse for managing, organizing, and exploiting your data... a client server environment...and a web enabler.

Explore All the Possibilities in Our Free OLAP Guide.

Be a part of the future of data discovery right now through our free OLAP Guide. Just give us a call at **919.677.8200** or **send us E-mail at cw@sas.com**

SAS® **SAS Institute**

The Business of Better Decision Making

Phone 919.677.8200
In Canada 1.800.363.8397

Visit us on the World Wide Web at http://www.sas.com/olap/

SAS is a registered trademark of SAS Institute Inc. Copyright © 1996 by SAS Institute Inc.

1076 YEAR 2000 SCOREBOARD

An occasional series on year 2000 trends, issues and statistics

The law – on your side

If you're bringing together executives to discuss your company's year 2000 problem, you should bring a corporate lawyer, too.

That was the message from Vito C. Peraino, a Los Angeles attorney who spoke at last month's Year 2000 Issues and Answers Conference in Chicago, sponsored by Digital Consulting, Inc. in Andover, Mass.

Bringing in lawyers will help illustrate the exposure a company's directors and officers could face if noncompliant software causes a company, or part of it, to fail, Peraino advised.

And the best way to sound the alarm to upper-level managers may be on the golf course or over lunch rather than via internal memo, Peraino said. Leaving a paper trail of warnings could make you more vulnerable on the witness stand if your company is taken to court because of a failure in its year 2000 fix.

As for the legal profession and the year 2000, "the lawyers are circling like sharks," author and software methodologist Ken Orr said in another address at the conference. "I tell my kids to know their Cobol and go to law school at night," he said.

Growing awareness

If you think there's increased awareness and alarm over the year 2000 date problem, look no further than the numbers of attendees and exhibitors at last year's three Year 2000 Issues and Answers conferences sponsored by Digital Consulting:

	JULY San Jose, Calif.	OCTOBER Orlando, Fla.	DECEMBER Chicago
attendees	[redacted]	[redacted]	[redacted]
exhibitors	[redacted]	[redacted]	[redacted]

Source: Digital Consulting, Inc., Andover, Mass.

Outside help

If the lawyers can't drive home the millennium message to the upper brass, whoever audits your company's books might do the job for you.

Representatives of two of the Big Six accounting firms — Price Waterhouse and Ernst & Young — say the firms' auditors may discuss the issue with their clients during the course of their work.

Randy Fletcher at Ernst & Young says his firm is making sure the top levels of a company are aware of the problem, if not attacking it. And if a company has a problem, he says, "we'll want to monitor that in the next few years."

And Dave Kaplan, a partner at Price Waterhouse, says, "Companies need to consider as soon as possible" what they should be doing to make their software year 2000-compliant. — *Rick Saia*

Seeking action in D.C.

With the 105th Congress seated and President Clinton being sworn in to a second term today, key Democratic lawmakers are pushing for more government action on the year 2000 problem, the Information Technology Association of America (ITAA) reports.

Sen. Daniel P. Moynihan of New York plans to reintroduce a bill that would create a federal commission to study millennium compliance, analyze costs and provide immediate recommendations and requirements to the president, Congress and the Defense Department. (In a recent *Computerworld* report, critics charged Clinton, Congress and top Pentagon leaders with not moving aggressively enough to avoid serious problems at Defense.)

Moynihan, the ITAA reports, is particularly interested in how compliant the government's finance agencies are.

Also, according to the ITAA, Rep. John Dingell of Michigan has asked the Securities and Exchange Commission (SEC) to provide annual compliance status reports on the SEC and the entities it regulates, such as the stock markets. Dingell says the year 2000 problem could harm individual investors because trades and interest may not be properly credited.

The right fit

Dave Bettinger discovered that starting a sideline business can help him make a mark in the world.

Bettinger, who by day is a senior technical writer for his company's year 2000 conversion project, joined millennium consultant Peter de Jager's Internet mailing list last year. Some people on the list said they ought to have their own T-shirts to highlight century date conversion work.

So Bettinger, who lives in Brunswick, Maine, formed Project 2000, Inc. (www.clinic.net/users/project2000/project2k.htm), which prints T-shirts, sweatshirts, polo shirts and baseball caps for conversion project teams and year 2000 service providers around the world.

The logo on the clothing consists of a globelike sphere with "Year 2000" stretched halfway around it.

Bettinger's customers come from the U.S., Europe, Canada and Australia. They tell him the shirts and hats are gimmicks that "draw some identity to the [year 2000] team and sort of makes them stand out a little bit.

"It's not going to be a morale booster, but it's certainly going to make it more fun," Bettinger says. "It gets visibility throughout the company." — *Rick Saia*

TALK BACK

DO YOU HAVE ANY TIPS, SUGGESTIONS OR IDEAS ON THE YEAR 2000 PROBLEM? SEND THEM ALONG TO RICK SAIA, ASSOCIATE EDITOR, MANAGING (RICK_SAIA@CW.COM).

COMPUTERWORLD

Visit our Web site (www.computerworld.com) this week for the debut of our year 2000 page, where you'll find the most recent articles and features on the millennium date problem.

END TAXA

Toda[illegible] swarm [illegible] applications, e[illegible] draining [illegible] precious IT resources. Planning. Deploying. Integrating. Training. Supporting. Migrating.

Enough!

Amdahl delivers integrated technology solutions across and between all major enterprise platforms — including all the professional consulting, integration and support services you need.

For S/390, it's our Millennium family of CMOS-based servers and Spectris storage systems. For Windows NT, it's our EnVista servers and LVS 4500 storage systems. For UNIX, we offer Ultra Enterprise servers and our proven UTS operating system for mainframes. All united with cross-platform connectivity and our A+ Software Application Management suite. Amdahl does it all, data center to desktop, start to finish.

Call Amdahl for a SWAT team over 10,000 strong, passionately committed to your success.

Contact us at (800) 223-2215 or www.amdahl.com.

intel inside

www.amdahl.com

amdahl

BRING US YOUR HARD PROBLEMS™

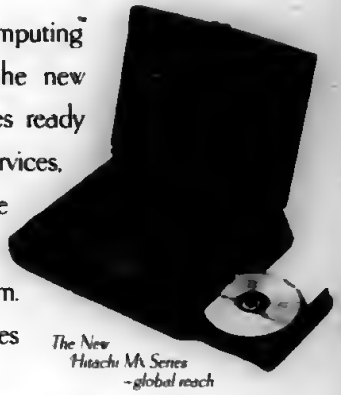
Introducing the New

HITACHI MX SERIES.

There was a time when Commanders-in-Chief could disappear for days at a time. They'd slip off somewhere to write a speech or fish or just make themselves generally unreachable to all three branches of government.

It's been awhile since presidents could do that. Heck, now even you can't do that. No matter where on the planet your business takes you, you're expected to be 100% on top of it.

The entire point of Hitachi Mobilized Computing™ technology. Elevated to a higher state by the new Hitachi MX Series notebooks. Every MX comes ready to connect to anywhere via the Net, online services, two-way fax. Over standard office networks on the built-in LAN port. Even wirelessly, through its integrated U.S. Robotics® cellular-ready modem. Meaning you can now send and receive both faxes and E-mail anywhere you can use a cell phone.



The New Hitachi MX Series –global reach

And now we're one of the very first to offer the most powerful chip ever put in a personal computer: The 166 MHz Intel Pentium® processor with MMX™ technology. Which makes possible vast new capabilities, including super fast and highly realistic graphics.

So, whether you serve in high office or home office, you now have the means to exercise the requirements of leadership. With Hitachi Mobilized Computing, the levers of power are always at hand.

MMX intel inside pentium

HITACHI MX SERIES: *Significant Features*

- U.S. Robotics® 33.6 cellular-ready modem for wireless FAX and E-mail
- Pre-configured communications software.
- Integrated 10-Base-T LAN port.
- Optional mini hot dock.
- 64-bit video acceleration.
- Intel Pentium® processor of up to 166 MHz. Fastest chip offered in a personal computer
- MMX™ technology for super-realistic video.
- Extra large (12.1") high resolution screen.
- Swappable CD ROM drive, up to 8x speed
- Altec Lansing® Stereo quality sound.

HITACHI
MOBILIZED COMPUTING™

Remote Control™

©1997 Hitachi PC Corporation (USA) All rights reserved. Mobilized Computing™ and Remote Control™ are trademarks of Hitachi PC Corporation (USA) which may be registered in some jurisdictions. The Intel Inside Logo & Pentium® are registered trademarks and MMX™ is a trademark of Intel Corporation. All other marks are owned by their respective companies.

PETER G. W. KEEN

PENDULUM SWINGS BETWEEN ROCK AND HARD PLACE

Charles de Gaulle once said he had lived an honorable and useful life but could truthfully say he never saw a problem solved. That may be the epitaph for many IS managers.

During the past 30 years, IS has tried repeatedly to resolve the same basic set of problems that at times have threatened its very identity, credibility and even existence. These are "classic" problems in that they have no final or single solution.

The problems include the relationship between designer and user of systems, the trade-offs in design between completeness and timeliness, the nature of effective design, the relative priority of investments in applications and infrastructures and, above all, the balance between central coordination of the enterprise IT resource and decentralized autonomy in decision-making and use.

Just about every large company faces a mix of these classic problems. Senior business executives keep looking for *the* answer. What if there isn't one? What if the underlying problems are part of a fundamental tension that is like a swinging pendulum?

The swing of the pendulum in the business use of IT has long been, is and will continue to be from innovation to discipline, back to innovation and back, again and again. It's this swing that makes IT such a political issue. When does the organization need a strong, central IS group for governance and oversight? When must it loosen central coordination and encourage local invention, case-by-case prioritization and matching of applications to fast-moving business demands? There really isn't one answer.

If you look at the history of IS, it's been a constant balancing of answers. In the 1970s, IS got stuck in the mode of overdiscipline and central control. The PC was the force that liberated local units from the iron hand of data-processing bureaucracies. The swing of the pendulum brought a wave of innovations first and then the erosion of IS identity and authority in many firms.

The pendulum continued to swing. The firms that best established a real dialogue between business and technology recognized the need for a blueprint for integration, an enterprise architecture backed by corporatewide standards and policies. The very same LANs that emerged to provide local autonomy in the use of computers as a business tool were seen as needing standards to ensure heterogeneous LAN/WAN/LAN interoperability. Help desks, economies of central expertise and network management tools contributed to much of the recentralization of distributed computing — distributed technologically, organizationally and in terms of authority and responsibility.

Now, intranets and multimedia are part of the next swing. Corporate IS will once again be seen as an impediment in many instances. Then, as the threat of even more multitechnology chaos becomes apparent — well, to quote de Gaulle's contemporary, Yogi Berra, it will be deja vu all over again.

The rise of the CIO was seen as the classic answer to all the classic problems. Now, even the CIO is seen as part of the pendulum. A recent roundtable of executives and IS experts published in the *Harvard Business Review* determined that what's going wrong is that CIOs still lack business credibility and understanding. The panel concluded that the next replacement should be someone who is a true businessperson. That won't work for long, either. Overseeing the design, implementation and operation of the enterprise multimedia network demands a true technology officer.

What the constant swing of the pendulum means is that a plurality of business managers is almost always dissatisfied with IS. Worse, top managers see IS as a recurring problem rather than understanding that IS lives with the pendulum problem. No matter how well-suited IS' organization, activities and strategies are today, tomorrow is almost here. There are answers, but not *the* answer.

The starting point for evolving the new IS generation, though, has to be to give up the search for the answer. The challenges for IS in 2007 and 2017 will be fundamentally those of 1967, 1977, 1987 and 1997. And the solutions in each of those periods will create the next problems.

Depending on the month, Keen is an author, consultant, public speaker or professor in Great Falls, Va. His E-mail address is pgwk@aol.com.

f.y.i.

Web wooing

You may more college recruits as well as customers with an attractive World Wide Web page, according to a recent nationwide survey.

The study, "How College Students Connect with Employers," was commissioned by Barnard Hodes Advertising in New York, which specializes in recruitment advertising and employee communications. More than 1,600 college juniors, seniors and master's degree candidates participated in the survey last spring.

Students said they use recruitment brochures as their primary job information source, followed by the Internet.

Among the findings were the following:

- During the 1995-96 academic year, 36% of survey participants had accessed at least one corporate Web site for job opportunities. Most sought full-time work and were most likely to be white males majoring in engineering or computer science.
- Thirteen percent applied for a job through a company's Web site.
- Those who used the Web to research potential employers were, on average, more impressed by a firm's use of technology than were students who didn't use the Web.

Despite the results, there apparently is no substitute for the human touch: More than 77% of students who participated in the survey said their schools' career services offices is job hunt, and 74% attended at least one career fair.

ALL YOU NEED IS INTERNET ACCESS
FREE
SEARCHING
NO CHARGE
TO SEARCH
THE DATABASE!

HOW TO FEED A HUNGRY WEBSITE.

Well, if your website's as hungry as most, feed it with Fujitsu's new ScanPartner® 600C color scanner. It's the easiest, quickest way to turn paper into digital content. The ScanPartner 600C is the only desktop color scanner in its class that comes standard with an automatic document feeder (ADF). You simply load the ADF with up to 50 pages of color images and text. And it turns paper into Internet/Intranet-ready image files, at the rate of up to 15 pages per minute.

So as you can see, the ScanPartner 600C will save you a great deal of time. And at less than $2000, it will also save you a great deal of money. And if that's not enough, the ScanPartner 600C has a two business day replacement warranty. All part of Fujitsu's No Excuses™ service and support policy.

The ScanPartner 600C. It's the fast, efficient and affordable way to feed your website. Buy one and you'll come back for seconds. To learn more, scan our website at www.fcpa.com. Or call 800-626-4686, ext 1031.

SCAN OUR SPECS

- *Single pass 24-bit charge coupled device (CCD) color scanning*
- *Up to 600 x 1200 dpi resolution*
- *15 pages per minute throughput at 200 dpi line art mode*
- *500 pages per day average duty cycle*
- *Flatbed with built-in 50-page ADF*
- *Supports Adobe PDF, JPEG, BMP, TIFF, PCX, DCX*
- *SCSI-2 interface*
- *TWAIN and ISIS driver support*
- *Bi-tonal, 256-level grayscale*
- *Includes ScanRight™ Image Kit*

Adobe Acrobat

Comes with Adobe Acrobat 3.0. Acrobat is the fastest way to publish and distribute documents over the Internet.

FUJITSU

©1997 Fujitsu. ScanPartner is a registered trademark, and ScanRight and No Excuses are trademarks of Fujitsu. All rights reserved. Acrobat is a registered trademark of Adobe Systems, Inc.

Buyer's Guide

NORTON AND WINDOWS 95: AN ODD, BUT USEFUL, COUPLE

By Jeffrey Gordon Angus

A YEAR AND a half after the debut of Windows 95, a second generation of operating system-enhancing utilities has arrived.

More people will pay attention to Symantec Corp.'s Norton Utilities 2.0 for Windows 95 than the other packages because of Norton's pedigree.

Version 2.0 for Windows 95 is a clever package that offers more than its competitors. But the product has its drawbacks. First, it still seems to carry a world view more appropriate to its DOS roots than to Windows 95. Second, it's still a pile of programs clumped under one product. The original Norton Utilities package was an early DOS offering and included a host of barely related tools with propeller-head names such as "SI." It required a pretty good comfort level with the dreaded DOS command line.

While later versions added a somewhat insulating shell to the potpourri, Norton Utilities was a favorite of power users and not something to be deployed to the masses. Every iteration made the product bigger and required improvements in the interface and documentation to maintain an ease-of-use balance.

Norton Utilities is still a boatload of programs tenuously tied together under one product. Apparently, Symantec is content to just add functions and ease-of-use features without examining the basic assumptions of such a utility package — who the users are and how they think. Symantec has taken this approach despite Microsoft Corp.'s effort to make Windows 95 an easy-to-use operating system and Windows 95's deep penetration into the home-user and low-tech users markets. For those low-tech users in your organization, Norton provides more functions and complexity than they need or can handle.

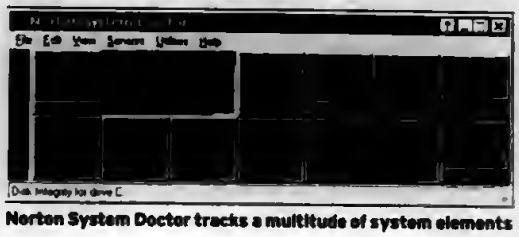
PRODUCT REVIEW

Norton Utilities Version 2.0

Symantec Corp.
Cupertino, Calif.
(800) 441-7234
www.symantec.com

Norton Utilities 2.0 for Windows 95 has some useful new tools. Most important to advanced Windows 95 users are the two registry utilities: Registry Editor and Registry Tracker. From a systems support perspective, the Registry is the key difference between Windows 95 and its Windows predecessors. It replaces the host of .INI files with a hierarchical, single-source file for configuration information. There's some good news in that change, but the bad news is that the relatively simple statements in an .INI file are replaced with a C-like language, nothing you'd let even an intermediate end-user mess with. And the solution to most problems that Windows 95 itself can't solve are centered, more often than not, right in the Registry.

While Windows 95 has an intrinsic registry editor, the Norton version is better. It includes multiple tabs in an additional window. One tab is sort of an online glossary that defines the folder that the cursor is on. When there is a definition available, it's pretty informative, but only if you already know about the registry. If you don't know much about the registry, this is no way to learn — you can still do dangerous things, such as delete needed entries, if you're not careful.



Norton System Doctor tracks a multitude of system elements

The Registry Tracker works much like an uninstall program and audits each change to the registry made by each installation program. If your system buys the farm after you install a new program, you can back out of the transactions and revive your computer. It also has a function for tracking elements installed by programs but no longer needed.

On my system, the function identified a gaggle of entries made by Norton Utilities itself. Those lines either were needed and incorrectly identified or weren't needed but were left by the Norton installer. Ideally, you could remove the extraneous entries, but it wouldn't pay to guess. Either way, Norton Utilities was culpable.

Another bug was in the installer, I suspect. After it made a clever automatic telephone call to Norton's bulletin board system with registration information, it locked up the modem by convincing Windows 95 that another program was using the modem. Cold boots, removing all start-up programs except Norton Utilities and going into DOS and re-initializing the modem all failed to cure this problem. And technical support was no help. My 29 calls to Symantec over a three-day period yielded nothing but busy signals.

Norton File Compare is another utility new to this version, and it's a good idea. But its implementation is a revision away from being truly useful. The idea is to be able to look at multiple versions of files

Norton, page 81

WINDOWS 95 UPGRADE REDUCES WASTED DISK SPACE

By Chris DeVoney

IF YOU'VE purchased new PCs in the past few months, you may be running a new release of Windows 95 without knowing it. But you should know about the upgrade because you can take advantage of some neat new features. Many computer manufacturers have hidden the second OEM service release (OSR2) of Microsoft Corp.'s Windows 95 under the covers since its fall introduction.

You can tell whether you are running OSR2, designated as Version 4.00.950 B, by checking the System applet in Windows 95's Control Panel. The new release is a series of patches, upgrades, add-ons and changes to the original Windows 95 product. The changes include support for the multimedia functions of the upcoming Intel Corp. MMX-based computers, improved wizards for installing new drivers and new versions of Internet and multimedia add-ons.

Most disk operations can now run 10% to 15% faster

The most important change is support for FAT32, a new disk directory scheme that supports disk partitions of up to 8G bytes and significantly reduces wasted disk space. Using 32-bit entries in a disk's File Allocation Table (FAT), Windows reduces the size of a disk's clusters (the smallest area the operating system allocates to a file) from 32K to 4K bytes.

For systems with many small files, FAT32 is a godsend. Because most single-page documents, electronic-mail messages and World Wide Web browser cache pages take 16K bytes or less, you can store several more files in the same amount of disk space under the new scheme.

The scheme tested well with most disk operations, running 10% to 15% faster, although disk defragmenting takes significantly more time. The downside is that you must use updated disk utilities, such as Symantec Corp.'s Norton Utilities 2.0 for Windows 95, with the new desk layout.

Microsoft's Windows NT can't read FAT32 volumes, so the new release is undesirable on dual-Windows machines. Microsoft hasn't stated when FAT32 support will be added to NT.

OSR2 also supports varied disk formats, such as 120M-byte optical discs, Iomega Zip drives, CD-changers and

Windows 95, page 81

You Can't Survive Without It.

The World's Premiere Exposition and Conference Dedicated To Internet Commerce and the Intranet.
The Internet Commerce Expo brings innovative solution providers and knowledgeable buyers together in a powerful Internet technology exposition and conference. It's your chance to get in on the hottest Internet action in the county. Don't miss it!

For Exhibitors: highly qualified, enterprise buyers will be there
There will be thousands of motivated buyers actively looking for the new products that have made the Intranet and Internet commerce practical and secure. There is simply no better way to reach this hot to buy audience than ICE. Corporate decision makers will be there in huge numbers looking for productivity enhancing solutions... and they find what they're looking for at ICE.

For Attendees. the coolest way to find the hottest IT solutions.
Hundreds of the leading hardware, software and network services vendors will be on hand to show you how to increase productivity and profitability via the latest Internet technology. ICE is the best and biggest event in the country for getting directly in touch with the providers of the hottest Internet solutions for the enterprise. That's why this is the show your simply cannot afford to miss. If you can attend just one show this year, better make it ICE.

In addition, the focused content of Internet Commerce Expo's industry leading conference program will address the needs of developers, IT and business managers and senior executives.

ICE. If it's hot it's here
There's a hard new truth in the world of business today and it goes like this: Internet commerce is the force driving business into the next millennium. So if you're a vendor with a competing Internet solution for the enterprise... or a corporate decision maker looking for productivity enhancing products, you need to be where it's hot.

See ICE on the Web: http://www.idg.com/ice

ICE℠
INTERNET COMMERCE EXPO
INTERNET SOLUTIONS FOR THE ENTERPRISE

April 8-11, 1997
Georgia World Congress Center
Atlanta, Georgia

September 8-11, 1997
Los Angeles Convention Center
Los Angeles, California

IDG
An International Data Group Company

ICE, the ICE logo, Internet Commerce Expo and Internet Solutions for the Enterprise, are service marks of International Data Group.

Sponsored by
COMPUTERWORLD
NetworkWorld
SunWorld
CIO
WORLD
WEBMASTER
JavaWorld
NETSCAPE WORLD

Please put me on ICE! I would like more information on: ❍ Exhibiting ❍ Attending ❍ Atlanta ❍ Los Angeles

Name_____
Title_____
Company_____
Address_____
City/State/Zip_____
Phone_____ Fax_____
e-Mail_____

Mail to: Internet Commerce Expo, 111 Speen Street, PO Box 9107, Framingham, MA 01701. Or Fax to: 508-370-4325. Phone: 800-667-4ICE

CW

"You are what you read."

SAVE OVER 73%

☑ Yes, I want to receive my own copy of COMPUTERWORLD each week. I accept your offer of $39.95* per year - a savings of over 73% off the single copy price.

First Name MI Last Name

Title Company E-mail address

Address City State Zip

Address Shown ☐ Home ☐ Business ☐ New ☐ Renew Single copy price $3.00/issue * U.S. Only Canada $95 Mexico Central/South America $150 Europe $295 all other countries $295

Please complete the questions below.

1. BUSINESS/INDUSTRY (Circle one)
- 10 Manufacturer (other than computer)
- 20 Finance/Insurance/Real Estate
- 30 Medical/Law/Education
- 40 Wholesale/Retail/Trade
- 50 Business Service (except DP)
- 60 Government State/Federal/Local
- 65 Communications Systems/Public Utilities/Transportation
- 70 Mining/Construction/Petroleum/Refining/Agriculture
- 80 Manufacturer of Computers Computer Related Systems or Peripherals
- 85 Systems Integrators VARs Computer Service Bureaus, Software Planning & Consulting Services
- 90 Computer/Peripheral Dealer/Dist./Retailer
- 95 Other _____ (Please Specify)

2. TITLE/FUNCTION (Circle one)

IS/MIS/DP MANAGEMENT
- 19 Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Management
- 21 Dir./Mgr. MIS Services, Information Center
- 22 Dir./Mgr. Network Sys. Data/Tele Comm. LAN Mgr./PC Mgr. Tech Planning Administrative Services
- 23 Dir./Mgr. Sys. Development, System Architecture
- 31 Programming Management, Software Developers
- 41 Engineering, Scientific R&D Tech Management
- 80 Sys. Integrators/VARs/Consulting Management

CORPORATE MANAGEMENT
- 11. President, Owner/Partner General Mgr
- 12 Vice President, Asst. Vice President
- 13 Treasurer Controller Financial Officer

DEPARTMENTAL MANAGEMENT
- 51 Sales & Mktg. Management
- 70 Medical Legal Accounting Mgt.

OTHER PROFESSIONAL MANAGEMENT
- 80 Information Centers/Libraries, Educators, Journalists, Students
- 90 Other Titled Personnel

3. Do you use evaluate specify recommend, purchase (Circle all that apply)

Operating Systems
(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep

App. Development Products ☐ Yes ☐ No
Networking Products ☐ Yes ☐ No
Intranet Products ☐ Yes ☐ No

4. Which of the following products do you buy, specify, recommend or approve the purchase of? (Check all that apply)
(a) ☐ Internet software
(b) ☐ Internet browsers
(c) ☐ Web authoring/development tools

5. Do you use the Internet? ☐ Yes ☐ No

COMPUTERWORLD

B4A7 #

"You are what you read."

SAVE OVER 73%

☑ Yes, I want to receive my own copy of COMPUTERWORLD each week. I accept your offer of $39.95* per year - a savings of over 73% off the single copy price.

First Name MI Last Name

Title Company E-mail address

Address City State Zip

Address Shown ☐ Home ☐ Business ☐ New ☐ Renew Single copy price $3.00/issue * U.S. Only Canada $95 Mexico, Central/South America $150 Europe $295 all other countries $295

Please complete the questions below.

1. BUSINESS/INDUSTRY (Circle one)
- 10 Manufacturer (other than computer)
- 20 Finance/Insurance/Real Estate
- 30 Medical/Law/Education
- 40 Wholesale/Retail/Trade
- 50 Business Service (except DP)
- 60 Government - State/Federal/Local
- 65 Communications Systems/Public Utilities/Transportation
- 70 Mining/Construction/Petroleum/Refining/Agriculture
- 80 Manufacturer of Computers, Computer-Related Systems or Peripherals
- 85 Systems Integrators, VARs Computer Service Bureaus, Software Planning & Consulting Services
- 90 Computer/Peripheral Dealer/Dist./Retailer
- 95 Other _____ (Please Specify)

2. TITLE/FUNCTION (Circle one)

IS/MIS/DP MANAGEMENT
- 19 Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Management
- 21 Dir./Mgr. MIS Services, Information Center
- 22 Dir./Mgr. Network Sys. Data/Tele Comm. LAN Mgr./PC Mgr. Tech Planning Administrative Services
- 23 Dir./Mgr. Sys. Development, System Architecture
- 31 Programming Management, Software Developers
- 41 Engineering, Scientific, R&D Tech Management
- 80 Sys. Integrators/VARs/Consulting Management

CORPORATE MANAGEMENT
- 11 President, Owner/Partner General Mgr
- 12 Vice President Asst. Vice President
- 13 Treasurer Controller Financial Officer

DEPARTMENTAL MANAGEMENT
- 51 Sales & Mktg. Management
- 70 Medical Legal Accounting Mgt.

OTHER PROFESSIONAL MANAGEMENT
- 80 Information Centers/Libraries, Educators, Journalists, Students
- 90 Other Titled Personnel

3. Do you use evaluate specify, recommend, purchase (Circle all that apply)

Operating Systems
(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep

App. Development Products ☐ Yes ☐ No
Networking Products ☐ Yes ☐ No
Intranet Products ☐ Yes ☐ No

4. Which of the following products do you buy specify recommend or approve the purchase of? (Check all that apply)
(e) ☐ Internet software
(b) ☐ Internet browsers
(c) ☐ Web authoring/development tools

5. Do you use the Internet? ☐ Yes ☐ No

COMPUTERWORLD

B4A7 #

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 55B MARION OH 43306

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P O BOX 2044
MARION OHIO 43306-4144

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 55B MARION OH 43306

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P O BOX 2044
MARION OHIO 43306-4144

PRODUCT REVIEW

NORTON AND WINDOWS 95: AN ODD, BUT USEFUL, COUPLE

CONTINUED FROM PAGE 79

(say SYSTEM.INI and SYSTEM.001) and compare them line by line, with indications of which lines were added, deleted or moved.

In principle, this is a fine utility, but this version incorrectly identified lines that moved as having been deleted, probably because the text in one was all uppercase and the other (identical in content) was all lowercase.

The Norton System Genie is the final new utility, and it also has some virtue, although future versions will be more useful. The Genie is a browser-based interface (specifically Microsoft Internet Explorer 3.0) multimedia title that is an artistically elegant way to access specific question-and-answer format topics on how Windows 95 looks and runs. Some of the topics include hot spots that trigger actions designed to speed up processes or automate changes. System Genie is a good start, but it still contains just a few dozen topics and will require organizations standardized on Netscape Communications Corp.'s Navigator to install the Microsoft browser to use the content.

> Norton Utilities is still a boatload of programs tenuously tied together under one program

Power users and people who've been using Norton Utilities for years will certainly want to use this product. Intermediate and low-end users may find a competitor, First Aid 97 from CyberMedia, Inc. in Santa Monica, Calif., more accessible. It's a little more organized, has more hand-holding features and quicker response from technical support.

In the end, the saving grace of Norton Utilities is the written documentation. Unlike the product itself, which is a jumble of programs, the manual is task- and solution-oriented.

The manual organizes the programs by function — prevention, recovery, performance and information — and then details under each program the reasons to use it and the circumstance under which you should use it.

The documentation almost makes this a coherent product instead of a messy tool box full of very useful items. If the program designers would follow the intelligent path the documentation folk have beaten for them, this product's strengths could be unleashed to the general masses of Windows 95 users, instead of only experienced users.

Angus is project director at The Data Works Ltd. in Seattle.

WINDOWS 95 UPGRADE REDUCES WASTED DISK SPACE

CONTINUED FROM PAGE 79

removable integrated drive electronics media. It also handles 4G-byte CD-ROMs and CD-I formatted disks.

Portables get a boost from OSR2. Units sporting the Advanced Power Management 1.2 BIOS should see longer battery life through the support for multibattery PCs, drive spin-down, power-down of idle modem cards and wake-on-ring modems. OSR2 also supports Cardbus (32-bit PC Cards), power-saving 3.3V cards, multifunction cards and Global Positioning System PC Cards.

The corporate network also gets some help. Data Link Control connectivity moves to full 32-bit speeds and OSR2 offers full client support for Novell, Inc. NetWare 4.x, including Novell Directory Services. Windows offers NDIS 4.0 drivers and support for network management applications using Desktop Management Interface 2.1 specifications.

The interface and scripts for dial-up networking are improved. OSR2 handles the new Radish Communications, Inc. VoiceView and AT+V voice modems, which can answer voice calls and switch between data and voice on the same call.

The new machines also save the information systems department some labor because OSR2 installs Microsoft's Internet Explorer 3.0, Internet Mail and News 1.0, NetMeeting 2.0, DirectX 2.0, ActiveMove and OpenGL drivers and libraries.

In testing with a new Quantex Microsystems, Inc. desktop and a Gateway 2000, Inc. 2100 portable computer, OSR2 appeared to be relatively bug-free and should be immediately accepted on new machines. The problem is migrating OSR2 features to established computers. Although some updates can be loaded from the Microsoft World Wide Web site, some features are exclusive.

PRODUCT REVIEW
Windows 95 OEM Service Release 2
Microsoft Corp.
Redmond, Wash.
(800) 426-9400
www.microsoft.com
B+

The hurdle is FAT32. Microsoft hasn't provided a transition tool for established drives to move to the new format. That is understandable but not commendable. For now, you must run FDISK to set up FAT32 on a disk, and that destroys all its existing information. Until the next version of Windows, code-named Memphis, rolls out late this year, it's put up with the extra work or shut up.

DeVoney is a reviewer in Seattle.

MY OPINION

It should have been my idea

ROSS M. GREENBERG

I FEEL STUPID. The next best idea since the original Sidekick comes along, and it wasn't mine. I mean, it's a simple idea, solving a need we've all experienced with a solution we all wish had been our own. I know I do. Instead, start-up company Mirabilis Ltd. in Tel Aviv (but with a New York site served by a T3 line) had it first.

So what is it, already?

ICQ (I Seek You) is easier to use than to explain, but here goes:

It's an Internetwide ability to pass simple notes to other ICQ users. And to chat or page them. It can pass files or favorite uniform resource locators (URL) to other users, too. You can watch when members of your contact list are online anywhere in the world.

Take a gander at the ICQ product, downloadable from the Mirabilis World Wide Web page at www.mirabilis.com. Don't waste your time looking for a price tag, though — there isn't one yet. And conversations with Mirabilis business personnel indicate there probably will always be a freebie version available. Only beta code is available now — but I've used production code of other companies' released products that crashes more frequently, taking out entire city blocks, or at least one of my disk partitions.

And consider this: Mirabilis has garnered 30,000 users so far, with no advertising at all, merely word of mouth. This is for a product only available — and only in beta — for the past four weeks or so.

I found the company's Web page and product by mistake, and later one of my fellow systems operators on The Microsoft Network (MSN) independently discovered it. Paul Mayer, who runs the shareware forum on MSN, posted a note to other systems operators saying "This is a cool product!" He was right — it suits our needs perfectly.

Every ICQ user registers (currently for free) and gets a personal number, called a UIN in ICQ parlance. That also comes with a free Web-pager page.

After you've registered, people who have you on their contact list will be advised when you're online and when you're off-line. I had a corporate chat I had to attend, and in the dead time between each scintillating comment, for which I waited with bated breath, another member of the corporate audience and I were having an ICQ chat. Another ICQ user was sending me pop-up electronic-mail messages, and I was able to call somebody on a voice line to remind them to log on, because I could see the person was off-line (having slept through an alarm — by five hours).

ICQ is smart enough to record the current URL you're viewing in Internet Explorer or Netscape Navigator, and it allows you to easily send that URL to another ICQ user. That user receives it immediately if logged on and, with a single keystroke, their browser is brought up and that URL is displayed. Nifty.

You can set up a portion of your home page with some HTML tagging to allow others to add you to their contact books with a single keystroke. You can have private chats with one person or open chats with multiple people — or by-invitation chats, if you wish.

Currently, all through-the-server needs, such as Web-paging, go through the Mirabilis server. Intranet users have nothing to fear — ICQ knows all about how to use firewalls properly, and a special intranet-only server version is being worked on, full of even more features. And it never strays past your firewall.

There's a "user away from their desk" feature that you can turn on or let your screen saver turn on for you. When someone tries to contact an "away" user, they get a configurable message instead.

It's really a simple idea, done very well. It should have been mine, damn it. Mirabilis is close to releasing, and it's busy trying to figure out which of a plethora of OEM deals is the best. This is a better mousetrap, for sure.

Greenberg is a software developer in Bovina, N.Y., who specializes in Internet and security products. He can be reached at greenber@romnet.com.

Don't miss the industry's most respected forum on Information Technology

One thing is certain in this constantly changing, dynamic world of information technology. You'd better be well informed if you expect to remain competitive.

For 32 years, the leading executives in the information technology industry have built on their success by attending IDC's Computer Industry Briefing Session. Spend just one day with top analysts from International Data Corporation and gain unique insight into the future of IT. Obtain an objective viewpoint of the industry today and what's ahead for tomorrow as we probe the issues and trends impacting emerging technologies.

To register and for more information, call:

1-800-343-4952

March 11, 1997
Boston, MA
Hynes Convention Center

March 18, 1997
San Francisco, CA
San Francisco Marriott

Co-sponsored by:

PC WORLD WORLD
COMPUTERWORLD
NetworkWorld

IDC

International Data Corporation
5 Speen Street, Framingham, MA 01701

AGENDA

8:45-11:30 MORNING SESSIONS

- **Introduction**
- **Capturing the Top 10 IT Growth Opportunities**
  Frank Gens, Senior Vice President, Research
- **Will the Telcos Win the Internet? IT Opportunities and Impact**
  Gigi Wang, Senior Vice President, Communications Industry Research
- **Outlook for New Internet Technologies**
  John Gantz, Senior Vice President, [illegible]
- **Software** [illegible]
  Tony Picardi, Group Vice President, Software [illegible]

Session A 1:15 - 2:00	Session B 2:15 - 3:00	Session C 3:15 - 4:00
TRACK 1: Internet Hot Spots		
Internet Technologies Opportunities [illegible] Challenges To [illegible]	Java's Path to Dominate HTML [illegible]	New Media In [illegible] Prime Time?
TRACK 2: PCs for the Next Millennium		
Plugging in the To[illegible] Outlook on the Information [illegible] Workplace [illegible]	The Coming World of the [illegible] Eric Lewis	Semiconductor Operation[illegible] on a Chip Solu[illegible] Mario Morales
TRACK 3: Winning Software Strategies		
The Application Co[illegible] Data [illegible] Strategies: What Fortune [illegible] You Pursue? [illegible] Morr[illegible]	Internet A[illegible]ness...Is Cl[illegible] Bust? Clay [illegible] [illegible]rainor	Bill's New Tap: Microsoft Out It In Co[illegible]? David Card
TRACK 4: NT in the Enterprise		
NT Adopti[illegible] Happen? [illegible]	[illegible]rvers and Cl[illegible] [illegible] Winning Strat[illegible] [illegible]ay Brekmann	[illegible] Killer or New Market Growth? Dan Kusnetsky
TRACK 5: LAN/WAN Dynamics		
Next-Gen[illegible] LANs: Treasure [illegible] Target! Mark Leary	Intran[illegible] Enterprise: Remo[illegible], Wi[illegible] Bandwidth, and [illegible] Lee W. Doyle	Network Management [illegible]g Value to the Peo[illegible] Rick Villars
TRACK 6: Market Spotlight		
[illegible] Richard Zwetchkenbaum	The [illegible] Gold Rush and the Backlog of Software Projects Tom Obrien	Japan [illegible] Outlook [illegible]

4:05-4:20 Keynote Address
Dr. Robert M. Metcalfe, Vice President of Technology, IDG

4:30 Cocktail Reception

In Depth

Artifacts may prove scarce as competing technology museums become

Archival Rivals

By [illegible] Picarille

PICK ANYTHING considered to have some cultural significance — even if it's debatable — and somewhere there's a museum paying homage to it. Barbie dolls, toasters, automobiles, dinosaurs, television — even Spam is thus enshrined.

Meanwhile, art museums are everywhere; civic pride dictates that any major city feature at least one.

But somehow, the number of museums dedicated to preserving, archiving and showcasing the historical and social relevance of computers has been minimal.

There's the Computer Museum in Boston. It's been around for 14 years, and its history proves one man's junk is another man's treasure. The museum was started from a collection of old Digital Equipment Corp. mainframes that were headed for the junkyard. Legend has it that a truckload of Digital machines was actually on its way to the dump when the driver received radio instructions to turn back.

But beyond Boston's Computer Museum and its West Coast branch — the Computer Museum History Center (CMHC) in Silicon Valley, which opened in October — there have been few serious efforts to create a computer museum on a large scale. The Smithsonian Institution has a standing exhibit titled The Information Age, but because the Washington national museum has a lending agreement with the CMHC, it's not interested in collecting computer artifacts.

Still, there's growing interest in preserv-

THE COMPUTER MUSEUM

Boston's Computer Museum, shown here, headed west to jar loose some Silicon Valley funding. But a San Francisco upstart has its eyes on IS history.

Archival rivals, page 84

Archival Rivals

CONTINUED FROM PAGE 83

ing the history of computing. Maybe that's because the Internet is delivering computing to the mainstream. So while the industry tries to figure out where the future of computing lies and how to cash in on it, more people say it's important to look backward.

"It's the zeitgeist, the spirit of the times," says Kip Crosby, executive director of the Computer History Association of California (CHAC) in Palo Alto. "One of the main reasons for the sudden interest in preserving computing history is that it's a fairly recent phenomenon — 95% of computer history is still within our grasp. People are jumping on it before it's too late to get to the beginning."

"Ninety-five percent of computer history is still within our grasp. People are jumping on it before it's too late to get to the beginning."
– Kip Crosby, executive director, CHAC

And in an industry filled with hype, one way to get to the truth is to document it in historical context.

Now there's a new kid on the block. Veteran trade journalist Frederic E. Davis is leading the effort to launch the San Francisco Computer Museum (SFCM) (www.fog.com), which has a three-pronged emphasis: history, art and hands-on exhibits designed to appeal to a broad mix of people.

The SFCM also hopes to leverage the fact that San Francisco is among the nation's top tourist destinations and that the Bay Area is chockablock with people who work in the computer industry.

One of the key elements of the SFCM, which could open as early as the end of the year if negotiations with the city stay on track, is a World's Fair-like exhibit that would feature futuristic technologies from a variety of companies. Visitors could play and interact with exhibits.

Compare this with the more staid approach of the CMHC. "We are not interested in being the Disneyland of computing," says Carol Welsh, managing director of the CMHC. She says the museum's collection can be viewed only by appointment.

The SFCM also plans to focus on digital art by showcasing multimedia and digital artists, which are often largely ignored by the traditional art world. "The true modern art is digital art," Davis says. "Most museums don't have the curators or the technical staff to maintain and select digital exhibits, which means digital artists don't get the recognition for their work."

The SFCM also has a software-archiving effort under way. The group plans to find the people who had the original rights to software and operating systems and acquire the binary code. The museum hopes to eventually store that code, documentation and source code on a World Wide Web server.

"Then we can look back and see the evolution of software creation," Davis says. "It's important to maintain computers in running order in the future, so they are not just artifacts. You'll actually be able to run them and see what things looked like."

Jeff Tarter, editor of "Soft-Letter," an industry newsletter in Watertown, Mass., says he would welcome more emphasis on software in the history of computing.

"Software has always played a very minor role in the [Computer Museum's] mix," Tarter says. "Historical hardware is the sort of thing that brings people to a museum. Early copies of VisiCalc and WordStar are vastly more important, but it's hard to create an exciting exhibit out of a piece of software."

"For the social computing significance, it might be interesting to look at the source code for Bill Gates' original Basic program, the software that started his whole empire," Tarter says.

COMPUTERWORLD
For information and links to museums, visit our Web site: www.computerworld.com

The CMHC is expected to cater to researchers, scholars, engineers and computer enthusiasts. Because Silicon Valley is seen as the birthplace of the PC, it made sense for the Computer Museum to branch out to the Bay Area. Temporarily located at NASA Ames Research Center's Moffett Field in Mountain View, Calif., the CMHC's collection tips the scales at more than 200,000 pounds, Welsh says.

The CMHC's collection is a mix of rare computers, firsts in their categories, historically significant machines and flops. The museum boasts a complete collection of computers designed by the late Seymour Cray. It also has software, product memorabilia, films, instructional videos, books, technical manuals and documentation.

Welsh says there's no way to put a dollar value on the CMHC's collection. "Nobody ever knows the value of this stuff until it's auctioned off," she says.

Having two computer museums start up in the same area at the same time could lead to some cutthroat competition for prime exhibits. Leaders from both the SFCM and CMHC met at the end of October to talk about the potential for competition. Although both groups agreed they don't want competition to degenerate to the level of snobbery that runs rampant in the traditional art world, no real cooperating agreement was reached.

Welsh says the Computer Museum and the CMHC are "graciously supported by the industry and private contributions." But one source familiar with the financial situation at the Computer Museum says finance may have played a role in its expansion to the West Coast.

That source also speculates that the CMHC is a transitional move and that eventually all operations will head west.

Despite the fact that the computer industry has made thousands of millionaires and a handful of billionaires and spawned numerous multibillion-dollar companies, it is considered a less-than-philanthropic industry. Some wonder if there's enough financial support for multiple museums.

"It might be better to have one modestly funded museum than two impoverished collections," Tarter says. "So far, the computer industry has barely been able to support one."

Picarille is Computerworld's senior editor, Apple and software suites. Her Internet address is lisa_picarille@cw.com.

The one that got away

By Steve Ulfelder

The best computer exhibit in the world is vibrant, forward-looking and interactive. It's also 4,000 miles and one ocean away.

The fact that such a center is in Linz, Austria, rather than Silicon Valley or along Route 128 in Massachusetts, ought to make the U.S. technology community blush.

Set smack on the Danube River in the third-largest city in Austria, the aggressively avante-garde Ars Electronica Center (www.aec.at) calls itself the "museum of the future." Visitors get a hands-on, interactive technology experience.

Horst Hortner, technical director of the center, says he wanted people to see the "true technology, not curtains and specialists." In that spirit, little is hidden at the center. Much of the cabling is visible, and most displays' servers are displayed proudly.

Visitors who crash (it happens) are assisted by one of Hortner's information systems staffers. There are 10 full-time IS workers and more than 60 volunteers. They do a bit of everything, from writing C++ code (Hortner is preparing at least one Java application) to tinkering with PC drives right on the museum floor.

The center's star attraction is the Computer-Aided Visual Environment (CAVE), a virtual-reality theater. It accommodates up to 12 people, led by one "masterguide" who controls the group's movements through cyberscapes that range from mathematical equations to virtual universes. The CAVE runs off more than $5 million worth of Onyx servers donated by Silicon Graphics, Inc. that run Irix 5.3 software. A mere five CAVEs exist worldwide, and the Ars Electronica Center's is the only one publicly accessible.

One exhibit showcases haptic technology, or virtual touch, from Cambridge, Mass.-based Sensable Technologies, Inc. Visitors balance and toss virtual shapes up and down and marvel at the illusion of mass.

But that version of the product is more than a year old. When Hortner is told that a more recent demo is available, he is clearly nonplussed. This is a difficult time to be in the futurist business.

Nevertheless, business is good. The Ars Electronica Center hoped to attract 50,000 visitors in its first year of operation; it reached that goal in three months.

Ulfelder is Computerworld's senior editor, In Depth. His Internet address is steve_ulfelder@cw.com.

'97

CORPORATE
TECHNICAL
RECRUITING
CONFERENCE

June 8 - 11, 1997

Marriott Rivercenter Hotel
San Antonio, Texas

Reserve your place at the hottest conference of the year.

Call 1-800-488-9204 for info

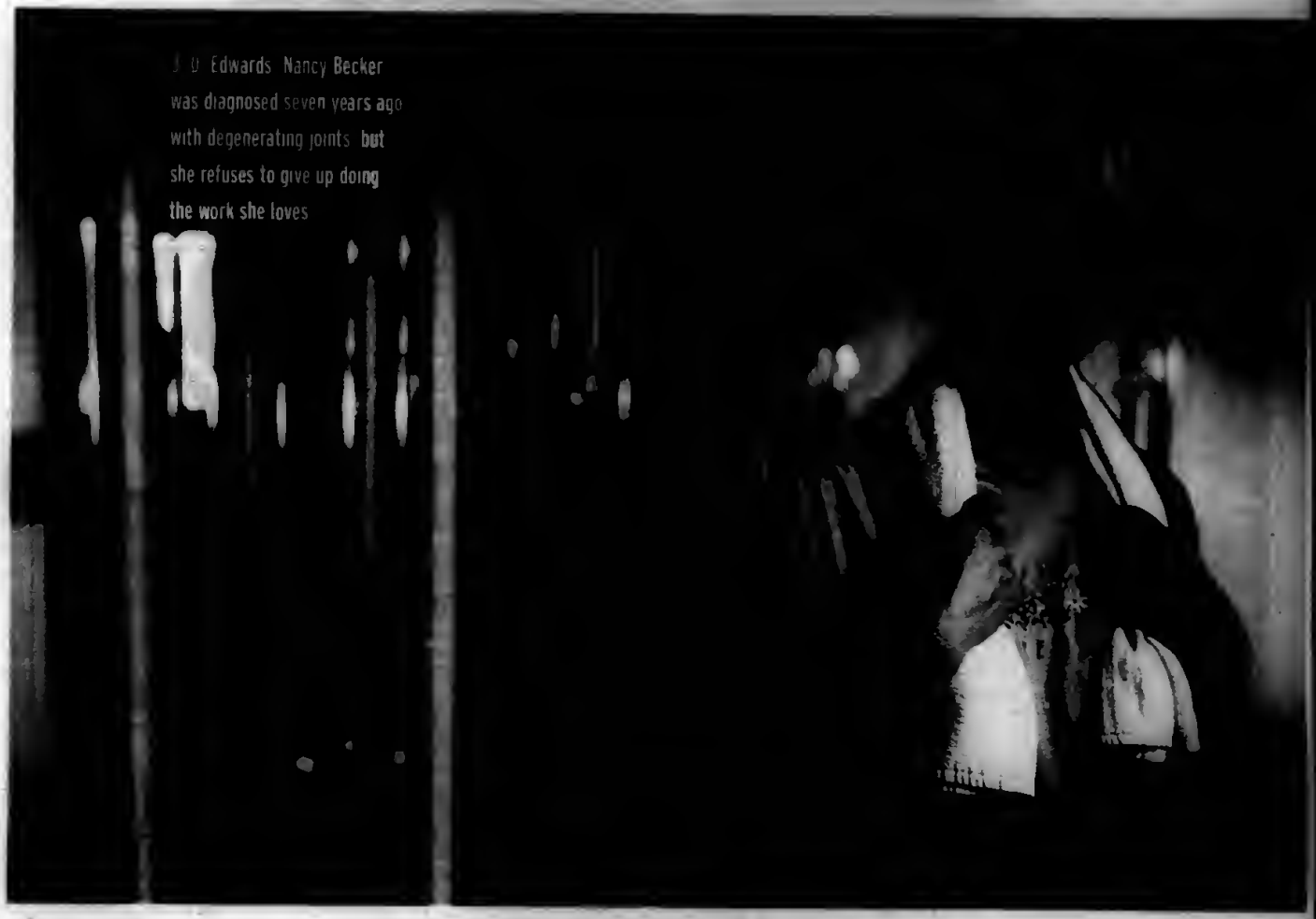
Start your day...

COMPUTERWORLD

The online connection of information technology leaders

www.computerworld.com

For ergonomics resources and buying tips for telecommuters, see our World Wide Web site at www.computerworld.com.



J. D. Edwards' Nancy Becker was diagnosed seven years ago with degenerating joints, but she refuses to give up doing the work she loves

PAINFUL LESSONS

By Rochelle Garner

Repetitive strain injuries are permanently altering the way some IS professionals work. Industry reporter Rochelle Garner explores the harsh reality she knows only too well.

I REALIZE I SHOULDN'T BE WRITING. My wrists burn and ache. My fingers tingle. But I have to earn a living. So despite having repetitive strain injuries (RSI) in both wrists, I marshal on, trying my best not to join the ranks of the permanently disabled.

Which is why, when I first recognized my symptoms last March, I wrangled a referral to an occupational therapist's office. There, in the heart of Silicon Valley, I discovered that these injuries aren't the exclusive domain of writers. Alongside me sat the white-collar professionals who helped build the computer industry.

Painful lessons, page 89

The Mind Of An Engineer And The Soul Of An Entrepreneur

If that's you, you need to be at Sapient.

A fast-growing firm that develops client/server and [illegible] applications, Sapient needs Client/Server Architects to help solve critical business problems for Fortune 500 clients in Boston, San Francisco, Chicago, Atlanta and the New York area.

The right individual will not only have a proven track record in delivering applications using tools such as PowerBuilder, Visual Basic, VC++, Corba(Orbix, Expersoft), Tuxedo, Oracle, Sybase, Informix, OLE, SQL/Anywhere and SQL server, but he/she will also be able to understand a client's complex business problems and then develop and communicate innovative technical solutions. In partnership with a Project Manager, he/she will also provide technical direction to a top-notch team of developers and will be in a leadership role in a fast-paced environment where integrity, commitment, teamwork and openness are truly valued.

A publicly-traded company (NASDAQ:SAPE) with a strong track record of growth, Sapient offers competitive salaries and benefits, as well as performance and stock incentives. The company also provides an unequaled opportunity to work with some of the best minds in the business as well as the latest industry-proven technologies.

If you're ready to make the change that could change your life, send or fax your resume and a cover letter indicating your location preference, to:

Mike Millar
Sapient Corporation, Department CW2,
One Memorial Drive, Cambridge, MA 02142
Fax: 617-621-1300 E-mail: CW2@sapient.com
http://www.sapient.com/

SAPIENT

Sapient is an equal opportunity EOE/D/V employer.

FOURGEN

Software Consultants-Application Developers-Business Systems Analysts

FourGen Software, a growing Northwest software company, has immediate openings for professionals to develop, install and customize our client/server Supply Chain Management software, including Distribution and Financial applications.

[redacted]

Install and customize our software with experience, with Informix 4GL or CASE Tools or equivalent in a UNIX environment preferred. Distribution or Financial applications experience a plus. Consultants travel extensively, and can be headquartered at a variety of locations throughout the U.S.

[redacted]

Develop our software in an environment that is moving towards object-oriented technology. Developers should have business applications programming experience using major RDBMS (Informix Oracle). Experience with UNIX and object-oriented design preferred. Positions are located in Seattle, WA.

[redacted]

Work with Developers to produce state of the art applications. Analysts should have 3 - 5 years experience implementing large business systems preferably in the areas of Purchasing and Replenishment. Also located in Seattle

At FourGen, we recognize our associates with competitive compensation and benefits and an excellent stock program. If interested in joining one of the Northwest's premier software companies, forward your information in confidence to:

FOURGEN Software
ATTN: HR - SC/AD
115 N.E. 100th St.
Seattle, WA 98125-8099
FAX(206)522-0093
e-mail: hr@fourgen.com

EDP PROGRAMMER/ANALYST

($42,036.80 + benefits)

QUALS: Min 2 yrs recent exp programming on IBM mainframe computers using COBOL-II, CICS, ISPF VSAM, DBS and MVS/ESA JCL;

Submit detailed resume by Tues, Feb 11, 1997 to:

Brenda Ralston, Personnel Analyst
Support Staff Personnel
Clark County School District
2832 E. Flamingo Rd
Las Vegas, NV 89121
or FAX (702) 799-1141
MF/D/EOE

Pacific Northwest

COMSYS
Information technology services

With over 3,000 consultants nationwide, COMSYS is a national presence & most local markets. In the Pacific Northwest, there are opportunities in the client/server & mainframe arenas. Additionally, there are in-house opportunities for the Millenium Services Division.

Our strong ethics have led to 10 years of strong local market leadership & local success measured in double digits.

COMSYS offers a competitive compensation & benefits package. For immediate consideration, mail, fax or e-mail your resume in a scannable format to: **COMSYS, Inc., 10300 SW Greenburg Road, Suite 230, Dept C, Portland, OR 97223, Fax: (503) 293-3898, Tel: (503) 293-2499, Web: http://www.comsysinc.com**

Equal Opportunity Employer

- Oracle Version 7
- Designer/2000
- Developer/2000
- Oracle Financials/HR
- Visual Basic/Access
- DB2, DBA
- DB2, CSP
- IEF/Composer
- CICS, COBOL
- IMS DB/DC
- Year 2000
- Natural/ADABAS

NATIONWIDE CONTRACT & PERM

Any and all skills are of interest to us with immediate positions for the following

PA/Sr. PA/Project Lead/ MGRS & Consultants for-

TRAD 2000/COBOL Programmers COBOL II/COBOL 370/CICS

MAD "IV" & MAA "I" series, HR/PR, Financials, PDL, MARS G, AMAPS etc. maint, upgrades and Yr 2000

SMARTSTREAM client server, all modules

PEOPLESOFT - AP/PO, GL, AP, AR

Unix System Admin/ Solaris Informix/4GL

Rates to $100/hr, Perms to 95k

send resume or call

EN-DATA CORPORATION
P.O. 2949
SANFORD, FL 32772-2949
Ph: 407-323-0033
Fax 407-323-0685
AOL:endata 1.com

Programmer, Engineering & Scientific—Evaluate, apply and convert the best available mathematical model/algorithms to network applications by using Optimization Theory and Numerical Analysis. Resolve problems of inaccuracy, optimization and flexibility of computer processing by applying modeling and simulation technology, probability and statistics. Design, develop, implement and maintain hardware and software elements for security and network management system which interconnect PC's, AIX, Sun workstations, HP TMOS system, ACD scanner knowledge-based and IBM mainframe in a heterogenous environment. Develop, build and integrate the Company's data management system by using Sybase Oracle on AIX and Sun workstations. Develop GUI (Graphic User Interface) front-end software applications for various network management system by using X/Motif, C++, TCL and others. Master in Computer Science and/or Information Science plus minimum of 1 yr's exp. in job offered req. Salary $40,000/yr. Work 9am to 6pm. Send two resumes to Georgia Dept. of Labor, Job Order #GA 6059811, 2943 N. Druid Hills Road, Atlanta, GA 30329-3909 or the nearest Department of Labor Field Service Office.

OPPORTUNITIES!

360+ Affiliated Offices
$38-$120,000+

AS/400/RPG/CL	SW Developers
DB2 or CICS	Lotus Notes Dev
BAL/VSAM	Archts./Sys/SW
EDI/VTAM	Project Leaders
Unix/SQL	Sys Engineers
Powerbuilder	GUI/RDBMS
Client Server	Oracle
WIN/NT/95	Sybase
Prog Analyst	Informix
Project Mgrs	Vis C++
Sys Programmers	Vis Basic
Delphi/FoxPro	OOA/OOD/SQL
Tandem/TAL	DBAs
ADW or IEF	Lan/Wan
Synon/CL	Sys Analyst
IMS/MVS	Dev Mgrs
C/C++	SAP/R2/R3
Peoplesoft	FT/Contract

RELIABLE "COMPUTERS"
11318 Davenport St., Omaha, NE 68154
(402) 330-2814 FAX (402) 330-8164
http://www.tech-recruiters.com

Computer Jobs...

Lots of em

http www SelectJOBS com

954 424 0563

Reserve your place.

June 8-11, 1997

Marriott Rivercenter Hotel San Antonio, Texas

Call 1-800-488-9204 for info

PAINFUL LESSONS

CONTINUED FROM PAGE 87

To my right was a high-level programmer from Hewlett-Packard Co. who is now limited to four hours of keyboard use a day. Behind us was a data analyst from Sun Microsystems, Inc. And to our left, a hardware designer. Together: we strapped on electrodes, plunged our arms into alternating hot and cold baths and popped mood-altering drugs to reduce the swelling in our wrists, arms and shoulders.

These computer professionals, trained in the latest technologies, had expected to work many more years for the corporate good. Now our contributions are limited.

In fact, I searched for new ways of pulling in income that don't require my sitting at a keyboard. No luck. But, as a writer who has covered the technology industry for 12 years, I wondered about these computer professionals and others like them. What kinds of futures do they face when they can no longer work as they once did?

NANCY BECKER IS ONE SUCH COMPUTER PROFESSIONAL. Becker, an Interleaf process manager at J. D. Edwards & Co. in Denver, was diagnosed seven years ago with degenerating joints in her fingers, back and neck. Yet she refuses to give up the work she loves.

"I've rescheduled my life into meetings where I don't have to work on the computer so much," Becker says. "And two or three times a week, at the end of the day, my whole body goes into traction at my physical therapist's office."

Sound pleasant? Now here's the scary part: The U.S. Department of Labor estimates that about half the nation's workforce will suffer some sort of cumulative trauma disorder by 2000. In 1993, the last year for which information is available, the Labor Department reported 302,400 cases of RSI injuries. That's up from 23,000 in 1981.

Already, estimates of total annual disability claims range from $563 million to $2.4 billion. Bear in mind that disability claims are filed only by people who require major medical intervention — people who have had to find new ways of working and even new fields in which to work. They are all worse off than I am. And yet, I have seen my productivity and my income drop to a quarter of what it was last year.

That hasn't happened to Becker, partly because her new role in management reduces her time at the keyboard. And partly because she has health insurance that covers seven years of physical therapy. (My insurance permitted a whopping nine visits to a therapist.) And partly because she works at an understanding company.

Although Becker's new role in management had nothing to do with her RSI, J. D. Edwards has set aside positions in quality assurance, sales and consulting for injured programmers.

"We anticipated a worst-case scenario where people might have to shift careers to accommodate their injuries," says Greg Dixon, director of human resources. "So far, though, no one has asked for that kind of help."

Becker hasn't because she refuses to give up. "I had a doctor tell me to quit, and I said, 'There's no way in hell,'" she says, explaining her regimen of frequent breaks, exercise and meetings.

This raises another key issue when dealing with RSI: attitude. Specifically, you can't expect someone else to make you better. Sure, surgeons can cut. But people typically lose about 20% of their strength and mobility after such surgery. And although physical therapy helps, all physical therapists will tell you that any improvement you make will depend on what you do on your own time.

I've assigned articles – and had articles assigned to me – on RSI. And yet, I blithely typed away for eight hours at a stretch with no breaks. — Rochelle Garner

"It's one thing to solve all of the equipment issues, but I have found that the crucial component in both preventing and getting over RSI is behavioral modification," says Dennis Mattinson, health and safety officer at Sun in Mountain View, Calif.

By behavioral changes, Mattinson means stretching, exercising, adopting better posture and taking frequent breaks. In fact, if you don't start taking breaks now — say every hour — you could end up like me and thousands like me.

But no one wants to change their routine. Take breaks every hour? That's for wimps. Sit up straight, with feet square on the floor? Get real.

"It's difficult to motivate someone who isn't injured," Mattinson says.

Let me try. Don't expect to recover from a repetitive strain injury in fewer than 10 months. That's the best-case scenario if you take immediate corrective action. People such as Becker will never recover. Never. Injuries that have progressed to her stage will last a lifetime.

Chances are, you've heard all this before. I'd heard it all before, too. In my 10 years as a computer journalist, I've assigned articles — and had articles assigned to me — on RSI in the workplace. And yet, I blithely typed away for eight hours at a stretch with no breaks. I slouched over the keyboard. I leaned on my elbows.

"Once someone is injured, they come back with a doctor's order of no more than two to fours hours a day typing, in periods no more than a half-hour," says Gary Karp, an ergonomics consultant at Onsight Technology Education Services in San Francisco.

It's hard to be productive when you have to work like that, I know. But I believed I was safe from injury because I used a wrist rest when I was working. And that points out the fallacy about these injuries that most of us hold: That the right equipment will make things better.

"Many of my clients expect their pain to go away by spending 10 minutes with the doctor or having their company buy them a good chair or a glare screen," Karp says. "But we find that, at best, ergonomic equipment solves only about 40% of the problem."

Which is why, even at companies with impressive injury-prevention programs, computer professionals still get injured. Consider the following: Four years ago, Sun's average RSI-related disability claim was $45,000 to $55,000. Today, the average claim is $3,500. Clearly, Sun has made remarkable inroads at preventing serious injury thanks to a combination of education, workspace assessments for everyone who asks and a corporate policy that recognizes that a $500 chair, amortized over five years, is chump change compared with a disability claim. But remember that my colleagues in pain at the occupational therapist's office included a data analyst from this very company. Her recovery depends almost entirely on her ability to make a lifetime of change.

This raises a painful moral: No amount of ergonomic equipment will prevent serious injury if you don't take charge of your own fate. Yes, it's a pain to stop work every hour. But do it. And when you catch yourself hunching over the monitor, sit up straight.

Most large companies offer ergonomics seminars. Pay attention to them. I'm working hard to regain my previous level of productivity, but RSI recovery is painful and painfully slow. So take my advice: Change the way you sit and work. Because the alternative can be downright devastating.

Garner is a freelance writer in San Carlos, Calif.

Ergonomics made painless

Training product offers tips for preventing injuries

By Jeffrey Gordon Angus

Training people who work with computers on how to avoid injuries is always a good investment. The exact amount of money paid out each year by companies in lost work time and increased workman's compensation isn't known — estimates vary considerably, from a half-million dollars to $2 billion annually.

But the biggest cost of technogenic injuries is never discussed: the low-grade diminishing of individual contributors' everyday effort.

ErgoKnowledge 2.0 from Graphic Media, Inc. in Portland, Ore., is a polished, multimedia computer-based training title. The product's audience is people who spend their days using technology to get their work done. It delivers practical advice for avoiding the health problems that can be side effects of that routine.

The CD-ROM runs on Windows 3.1, Windows 95 and Macintosh systems. It delivers about an hour of constructive advice broken down into bite-size lessons you can take at your own pace. It discusses the common points, such as precisely how to adjust your chair, keyboard and monitor, and more tricky subjects such as lighting and the importance of stretching.

The product does an excellent job of using the multimedia approach. The canned video clips' personalities are pleasant and not too perky for most observers. The graphics are clear in showing proper and improper body positions, so most people will be able to follow the guidelines. And it includes a lot of guidelines. I've been tracking this subject for my practice for a long time, and I found a few new suggestions to implement on the effects of clothing and foot placement.

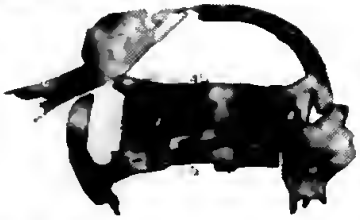
Each section has a test to reinforce learning immediately. There's a summary test at the end. I think the test is a bit too easy, so if someone flunks it, you know they're clueless or picking random answers. The product includes an administrative module to track scores and training time or configure the product to include only specific pieces of the training.

Angus is a systems analyst at The Data Works Ltd. in Seattle.

M A N A G E M E N T C O N S U L T I N G

Don't Just Come Along for the Ride.

Grab Hold of the Wheel.



Reducing time to market. Leveraging knowledge. Leveraging technology. Improving profitability and competitiveness. Responding to and anticipating changes in the global business environment.

As an Ernst & Young consultant, you'll help some of the most dynamic companies in the world develop and implement innovative solutions to their strategic and operational challenges. You'll have the opportunity to develop new mission-critical systems and increase your scope of responsibilities, plus you'll be supported by leading-edge technology and training. Every member of our team delivers value and contributes to the growth of our organization by attaining, accessing and transferring knowledge. The more knowledge you have to share with our clients and your team members, the more successful you can become.

Currently, our Chicago, Cincinnati, Cleveland, Columbus, Detroit, Indianapolis, Milwaukee, Minneapolis, New York and Pittsburgh offices are seeking to expand the Information Technology Consulting Group.

INFORMATION TECHNOLOGY (IT) CONSULTANTS

The ideal candidates will have 3 to 15 years of experience developing and implementing major business applications in a Fortune 1000 environment; MIS/Computer Science or related degree preferred; MBA a plus. Successful candidates will also possess a working knowledge of Client Server and distributed computing technologies such as UNIX, Informix, Oracle, Sybase, or PowerBuilder and major vendor packages such as PeopleSoft, Oracle, BaaN, or SAP. Experience in the manufacturing, insurance, or financial services industries or in Year 2000 is preferred. Strong consulting skills, the flexibility to travel, and the ability to translate technical concepts into a business context are a must.

If you'd like to know more about our extensive resources and vision of the future, send your resume, including salary history and location preference, to: ERNST & YOUNG LLP, Attn: IP/MC, 233 S. Wacker Dr., Chicago, IL 60606. Fax: (312) 879-3892. No phone calls please.

ERNST & YOUNG LLP

Ernst & Young, an equal opportunity employer, values the diversity of our workforce and the knowledge of our people

---

TECHNOLOGY PROFESSIONALS

SCB is a rapidly growing comprehensive provider of value-added information technology services to governments, public utilities, Fortune 500 companies and other large commercial clients. The Company is seeking dynamic individuals with relevant experience for immediate long-term opportunities as Consultants, Programmers and Analysts in its locations across the country.

Desirable skills for Programmers and Analysts include the following:

- IMS DB/DC
- DB2
- COBOL
- CICS
- IDMS
- TELON
- AS400/RPG
- SAS
- VISUAL BASIC
- FOXPRO
- SYBASE
- PARADOX
- UNIX ADMIN
- ADABAS/NATURAL
- ORACLE
- SMALLTALK
- SNA

SCB is a publicly traded company listed on the Nasdaq Stock Market. The Company offers employees competitive salaries and benefits including stock options and incentive-based awards; leadership opportunities through a decentralized management structure and unique career path opportunities resulting from being a rapidly growing company. Learn more about SCB at http://www.scb.com

SCB Computer Technology, Inc.
Attn: Debbie Perdueck
1375 West Briarbrook Road
Memphis, Tennessee 38138
FAX: 901-759-4836
FAX: 800-533-0786

An Equal Opportunity Employer

SDS

An Information Technology Firm

Permanent and contract positions are currently available throughout the Southeast. Any and all skills are of interest to us:

- CLIENT SERVER
- MAINFRAME
- MIDRANGE

Excellent compensation and benefits, training, relo. assistance, and 401-K. Call or write today: Software Data Services, Inc., 4600 Park Road Suite 109, Charlotte, NC 28209

PHONE: [illegible] or (704) [illegible]
FAX: [illegible]

Software Engineer Develops, designs, modifies, and implements software systems for use in digital simultaneous voice data and voice/video fax modems for use in personal computers. Develops related Windows Virtual Device Drivers and high-bitrate multimedia communication protocols by using Visual C++ and 32 Bit Assembly language, Windows DDK and Windows SDK to insure proper installation and optimization of signal, speech, and data communications processes on Windows 95 operating systems. Requires Master's degree in Software Engineering or Electrical Engineering. Education to include completion of project in: Porting and implementation of a variable length message send and receive interprocess communication mechanism speech synthesis and recognition. Education to include completion of one course in Computers and Translator Writing Systems and one course in Speech Processing by Computer. Must have proof of legal authority to work permanently in the U.S. 40 hours per week, 8:30 a.m. to 5:00 p.m. Salary: $42,840.00 per year. Please send resume to: Pat Morris, Human Resources Generalist, Ref. AC, U.S. Robotics, Inc., 7770 North Frontage Road, Skokie, Illinois 60077-2690. No calls.

Software Engineer: Designs and develops digital signal processing software programs written in C and Assembly language for use in digital signal data communication protocol installed into various high speed networked data communication products. Implements various data compression software, including V.42bis, as well as develop ancillary error-correcting programs for use in variable length coding of such signal software. Implements, integrates, and tests (using protocol analyzer) ISDN data link and network communication Q.921 and Q.931 protocols into network digital signal access products. Requires Master's Degree in Software Engineering or Electrical Engineering. Also requires six months direct experience in the job offered. Must have proof of legal authority to work permanently in the U.S. 40 hours per week, 9:00 a.m. to 5:00 p.m. Salary: $47,500 per year. Please send resume to: Craig D. Osmond, Sr. Technical Recruiter, Human Resources, U.S. Robotics, Inc., 8100 N. McCormick Blvd., Skokie, IL 60076. No calls.

Senior Consultant. Houston, TX. Conduct project mgmt & planning of consulting engagements for energy & chemical manufacturing industry clients w/ particular focus on business process modeling & reengineering, & direct focused improvement engagements. Analyze design customize & implement business applications. Direct & manage project work flow & plan, organize & control assigned tasks. Promote creative or alternative ways to utilize talents of assigned employees w/in the engagement. Train client application support team. Develop client server platforms on PC and mainframe computers using Cobol, SQL, Powerbuilder, and CSP/RSA, as well as relational & multi-dimensional databases, such as Sybase & DB2. Perform practice development w/ a focus on existing & prospective energy & chemical manufacturing industry clients. 40 hrs/wk. 8:30-5:30 $44,000 per yr. Bachelor's degree in Computer Science or Management Information Systems, and 2 yrs exper in job offered or related positions of Consultant or Systems Analyst. 2 yrs exper in related occupation must include design, customization, & implementation of client/server systems, & business process modeling reengineering, & direct focused improvement for energy & chemical manufacturing clients, using Cobol, SQL, Powerbuilder, CSP/RSA, Sybase & DB2. Approx 60% of job time devoted to travel both in & outside the U.S. for periods of 1-5 days at a time. Apply at the Texas Workforce Commission, Houston, Texas or send resume to the Texas Workforce Commission, 1117 Trinity, Room 424T, Austin, Texas 78701, J.O. #TX7858628. Ad paid by an Equal Opportunity Employer.

Database Analyst. Analyzes, designs, and performs multiple user databases installed in an AS/400 midrange computer using DB2/400 relational database for multiple business applications. Performs appropriate RPG/400 and JCL programming to insure integration and concentration of databases with other sources to insure appropriate and accurate data transmission and database sharing. Evaluates and modifies new existing database application based upon individual government agency requirements. Performs network interface between local PC networks using PowerBuilder tools and Visual Basic to connect such computers with an AS/400 using Client Access/400 facilities. Requires Master's degree in Mathematic or Computer Science. Also requires nine months experience in the job to be performed. Must have proof of legal authority to work permanently in the U.S. 40 hours per week, 8:00 a.m. to 5:00 p.m. Salary: $45,299.00 per year. Please send resume to: Mr. Olufemi Fotarin, Human Resources Director, City of Elgin, 150 Dexter Court, Elgin, IL 60120-5555. No calls.

Systems Engineer 40 hrs./wk. 8am-5pm. $54,000/year Design & development of a benefits administration using object-oriented design in a 3-tiered client-server environment. Perform object oriented analysis & design w/ prototype C++ coding & subsequent sub-system development in multi-platform environ. Using Rumbaugh's methodology for design & HP/Centerline C++ (under HP-UX) for implementation. Resp. for integration of subsystem into large business. Req. Bach-Comp. Sci, & 2 yrs exp in job or 2 yrs as Software Engineer (Consultant) & verif ref. Must have proof of legal authority to work permanently in U.S. Send 2 copies of both resume & cover letter to: Illinois Dept. of Employment Security, 401 S. State St.-3 South, Chicago, IL 60605, Attn: Joan Sykstus, Ref # V-IL 15719-S. An Employer Paid Ad. No calls.

Systems Analyst - Madison, WI - Design, develop and implement information management systems on IBM mainframes using DB2, COBOL and JCL. Prepare prog specs and sys docs. Enhance/debug existing sys and progs. Req Bach Comp. Sci./Appa./Engr. Elect. Engr. or Math and 2 yr exp inc 1yr exp using ADW. M-F, 9:00AM - 5PM. 40 hrs/wk, $45,000/yr. Two copies of resume to: M. Brooks, File #960261, DWE-ALC, PO Box 7972, Madison, WI 53707-7972. Ref file #960261.

Reserve your place.

June 8-11, 1997

Marriott Rivercenter Hotel San Antonio, Texas

Call 1-800-488-9204 for info

UNIX SYSTEM CONSULTANT
TANDEM SYSTEM CONSULTANT

The Knack To Lead The Pack

If you have a sixth sense for spotting technical problems and an inclination for solution implementation, First Bank System has an opportunity you should check out. One of the largest financial-holding companies in the Country, we're currently seeking technical experts to direct and monitor operating system software/hardware. You'll analyze project requirements and recommend enhancements to fit architectural strategies, as well as help ensure proper installation and functionality.

Qualifications include a bachelor's degree or equivalent, performance/tuning capabilities, and leadership and mentoring skills. One position requires extensive experience in an RS6000 environment; the other, a thorough background in Tandem. Experience in VTAM, NCP, RS6000 SP/2, Filenet or AS400 is a plus.

First Bank offers a competitive salary and opportunity for growth in a professional setting. Please send resume with salary requirements to: **HR-ENER0108-NR, 1200 Energy Park Drive, St. Paul, MN 55108 or fax to (612) 962-1540, or email to NREYNOLD@MR.Net**

First Bank System

First Bank System is an equal opportunity employer dedicated to affirmative action and a diverse workforce.

Computer Consultant for Industrial Engineering Applications: Design, develop, test & implement corporate information systems in manufacturing industrial engineering & corporate environments using object oriented, design, C, C++, Object Store X-Shell & simulation & modeling techniques. Design & develop graphical user interfaces using Visual Basic. Test each system developed using testing tools. Develop system test strategies & create test cycles. Develop application & performance test cases & automated testing scripts to execute the test cases. Validate test results & create test problem reports. Perform software configuration management on large complex applications using configuration management tools such as PVCS Tracker & PVCS Version Manager. Minimum Requirements: Master's of Science in Industrial Engineering or Computer Science. Must have completed one course each in: 1) Information Systems, 2) Modeling & Simulation, & 3) Intelligent Manufacturing Systems. Must have completed at least one major project involving simulation, modeling & analysis of information systems. One year experience in the position offered or as a Software Analyst. Must have experience in 1) Object Oriented Technologies, & 2) Testing & Configuration Management of large complex applications using configuration management tools such as PVCS Tracker, PVCS Version Manager & Automated testing tools. 40 hours per week. 9:00 a.m. to 5:00 p.m. Rate of pay: $48,000 per Year. Must have proof of legal authority to work permanently in the U.S. Submit 2 copies of both resume and cover letter to the: Illinois Department of Employment Security, 401 S. State Street - 3 South, Chicago, IL 60605. Attn: Leila Jackson, Ref #V-IL-15491-J. An employer paid ad. No calls.

Database Design Analyst. 40hrs/wk. 9am-5pm. $39,450/year. Analyze, design, develop, & reprogram current system with a series of program codes for barcoding, scanning, & data processing programs. Design, implement, & maintain Invisible Local Area Network of 80 workstations. Maintain & update networking, inventory control, file management, and database management. Locate & correct programming errors. Tools used: Cobol, Lotus Notes, Netserver, DBase, MS Office. Design physical data base & coordinate data base development. Requires MS, or must complete all courses for MS, in Computer Science & 1 yr experience in the job offered. Database Design Analyst experience does not need to be for Mail Order Merchandiser & Retail Store Management. Must have proof of legal authority to work permanently in the US. NO CALLS - SEND 2 COPIES OF BOTH RESUME & COVER LETTER TO: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 3 South, Chicago, IL 60605, Attention: JOAN SYKSTUS, Reference #V-IL 15955-S. AN EMPLOYER PAID AD.

We Couldn't Give You **ONE** Good Reason **Why** You Should Work With Us.

"Career Development" "A Future After a Project is ..." "Long-term Employment" "Gain..." "Telecommunications Experience" "Job Satisfaction" "Training, Advancement & Education Opportunities" "Easy Commute-No Traffic" "Great City with Cultural Activities" "Good People-Leaders" "Long-term Career Growth" "Flex Hours" "Working with New Hot Technologies" "Progressive, Dynamic Company" "Reputable/Solid Company" "Ameritech Image" "Potential to Create Future Architecture" "Job Longevity" "Casual Dress" "One of the Largest IS Shops in the Midwest" "Fast-paced Telecommunications Industry" "Good Location" "Good Benefits" "Good Salary" "Free Parking" "Safety" "Technical Activity" "Ameritech Values People" ... "Telecommunications ..." ... "Industry ..." ... "to Career ..."

We are the **BILLING SOLUTIONS GROUP**, and we're working on an important project: redesigning our customer billing process/systems to innovate and implement customer-focused ideas. Considering the fast rate at which the telecommunications industry is growing, we're sure that there will be many more interesting leading-edge assignments coming our way. If you are a **BILLING** or **SYSTEMS PROFESSIONAL** and are able to work here, we highly recommend that you consider one of these positions.

- **Programmer/Analysts**
- **Sr. Programmer/Analysts**
- **Managers**
- **Project Leaders**
- **Test Analysts**
- **Oracle DBAs**
- **Technical Architects**

We're looking to compliment your COBOL II and JCL skills with ours.

Need a few more reasons to consider working with us? Call the Ameritech recruitment team, *confidentially of course*, at: **1-800-807-WORK. FAX** your resume, indicating area of expertise, to the **Ameritech Billing Solutions Group, Attn: CW at 1-888-7RESUME**, or **APPLY ONLINE** at: **www.employamerica.com**

Ameritech.

Your Link To Better Communication

The Billings Solutions Group has facilities near Chicago, Milwaukee, Cleveland and Indianapolis. We offer relocation assistance and would be happy to provide you with information about the area, upon request. For a current listing of opportunities in other Midwestern cities, go to www.employamerica.com and click on Ameritech.

CDSI
Computer Data Systems, Inc.

Software Professionals

Computer Data Systems, Inc.® (CDSI), a premier information systems company, has immediate openings for software developers, engineers, database programmers & configuration management analysts & other related positions. Most positions require a related BA/BS & skills &/or related exp. in one or more of the following:

Kansas City, MO (includes Omaha, NE & Quantico, VA area)
- Natural/Adabas
- JCL
- UNIX
- FORTRAN
- OS/2
- SABRS
- Oracle, Oracle Forms 4.5
- CBT Development w/ PC Graphics

San Antonio, TX
- Oracle Case/Forms/Reports/DBAs
- Visual Basic, Powerbuilder
- PERL Script, Solaris
- UNIX
- USAF Samuel Edit Systems Spec
- HTML
- IDEF0/IDEF1/IDEFX
- C/C++

St Louis, MO
- SAS
- Oracle DBAs/Oracle v7
- Network Installation
- UNIX Systems Administrators
- Help Desk/End-User Support

Denver, CO (includes Ft. Collins, CO, Salt Lake City, UT Dugway, UT & Colorado Springs, CO area)
- C/C++
- Visual Basic
- UNIX
- Informix, X Windows
- PERL/HTML
- Oracle v7
- Help Desk
- AutoCad
- GIS
- UNISYS 2200

New Orleans, LA
- Mapper Programming Language
- GIS
- ARC/INFO
- Oracle v7 GUI
- Client Server
- Intergraph
- UNIX Systems Administrators

Ft. Worth/Dallas, TX
- C/C++
- FoxPro

CDSI offers a competitive salary & a full benefits package. For consideration, send resume to: **CDSI, Attn: NED-3472, 810 Houston St., Ste. 680, Fort Worth, TX 76102. Fax: (817) 335-3631. Internet: kathy.colburn@102262.3447@compuserve.com. EOE M/F/D/V**

Please specify job & location preference.

Advanced Technology. Common Sense Solutions.

A System For Life.

SENIOR TECHNICAL SUPPORT ANALYST

Presbyterian Healthcare System of Dallas, has an exciting opportunity in Information Services, Technical Support. The ideal candidate for this position will have technical experience supporting healthcare-related software in a Shared Medical Systems (SMS) environment and will have skills to provide DASD management on a MVS/ESA platform using DFHSM and related utilities. CICS, DB2, TSO required.

Qualified candidates may submit resumes to: **Planning & Placement, PRESBYTERIAN HEALTHCARE SYSTEM, Jackson Bldg., 8200 Walnut Hill Lane, Dallas, TX 75231, (214) 345-5903, (800) 749-6877, fax (214) 345-4003, Internet: phsjobs@wpmail.phscare.org.**
An equal opportunity employer.

Presbyterian Healthcare System
It's all in the way we treat you.℠

SAUDI ARABIA

AL-KHALEEJ

Computer & Communications Consultants

AL-KHALEEJ Computers & Electronic Systems, one of the fastest growing and most experienced in providing of Computer & Communications Consultants to a large multinational oil company has IMMEDIATE OPENINGS with technical expertise in the following:

MAINFRAME PROFESSIONALS:
To design, develop and support computer applications systems. Candidates should have experience in some of the following areas: **DB2, COBOL II, IMS DB/DC, TELON, PL1, CICS,** [illegible]

SYSTEMS ADMINISTRATORS/DATABASE ADMINISTRATORS/APPLICATION DEVELOPERS:
To Design, develop and enhance applications in a Client Server environment. Candidates with experience one or more of the following areas: **POWERBUILDER, ORACLE, PL/SQL,** [illegible] **TCP/IP,** [illegible]

SYSTEMS PROGRAMMERS: with at least 5 years experience installing & tuning MVS/ESA and Parallel Sysplex Environment. Knowledge in using MICS & CA-ACT2 products.

COMMUNICATIONS ENGINEERS: Experience in one or more of the following areas or the engineering, planning & installation of corporate Computer & Comms. Systems including data networking associated with new technology such as Client Server [illegible] **Q.A., LAN/WAN Infrastructure,** [illegible] **ATM.**

We offer extremely attractive **TAX-FREE** salaries with expat/repat tickets, housing & car allowance, medical insurance, paid vacation leave. Please send your complete resume to:

Al-Khaleej Computers - HRD
P.O. Box 2062, Al-Khobar 31952, Saudi Arabia
Fax: (966) 3 - 894-6032 • Email: [illegible]

INTELLIGROUP, INC.

your partner in success...

Intelligroup is a leading management and technology consulting firm providing IT solutions to Fortune 500 clients in North America, South America, Europe, Asia, New Zealand, South Africa and the Caribbean.

With revenues in excess of 45 Million dollars and a team of 450+ dedicated IT professionals worldwide, Intelligroup has been the success story of 1996.

Rapid Implementation Methodology, Proprietary Development Toolset and Strategic Business Partnerships have led to major projects involving ERP Softwares including SAP, BAAN, PeopleSoft and Oracle Applications.

We are currently staffing to meet our increased resource requirements for the coming year. Permanent and Contract Positions are available both in the domestic and the International markets. Compensation and benefits are comparable to the best this industry has to offer.

If your profile matches any of the following skill areas we would be interested in hearing from you.

PROJECT MANAGERS
SAP, Baan, PeopleSoft, Oracle Applications

FUNCTIONAL CONSULTANTS	TECHNICAL CONSULTANTS
SAP R/3 3.0+ : HR, PS, PM, SM, SD, MM, PP, CO, FI, AM & QM Modules;	SAP R/3 3.0+, ABAP/4, BASIS, EDI, Workflow, ALE Experts;
Baan IV Financial, Distribution, Projects & Manufacturing Modules;	Baan: Baan Tools Experts;
PeopleSoft HRMS, & Financials Modules;	PeopleSoft: PeopleTools, PeopleCode, & SQR Experts;
Oracle Applications Manufacturing, Distribution & Financials Areas.	Oracle Applications Technical Experts.

Please mail, email or fax your Resumes to our corporate office
Attn: Recruitment Cell, 517 US Highway 1 South, Iselin, NJ 08830
Fax: 908-750-1880; Phone: 908-750-1600; email: recruiter@intelligroup.com
Homepage: www.intelligroup.com

Give yourself that Competitive Advantage. Join Hands with a winning Team!!!

The Edge in Information Technology Personnel Permanent/Contract

Visit our interactive home page at:
http://staffingedge.com
for detailed information on available opportunities and candidates
or call

[illegible]

INTERNATIONAL SYSTEMS PROFESSIONALS
A Fast-Growing National Consultancy Offers
Exciting Opportunities For Top Quality Professionals
PROJECT MANAGERS
TEAM LEADERS/ CONSULTANTS
•Long-Term Career Opportunities
•Short-Term And Long-Term Contract Opportunities
EXPERIENCE IN
ALL SAP R/3 MODULES BASIS AND ABAP
Oracle • PeopleSoft • Baan
Performance-Based Compensation provides exciting opportunities for experienced professionals. (TO $250K OR $150 PER HOUR FOR EXPERIENCED SAP EXPERTS)
PLEASE FAX RESUMES TO 516-489-0740
or visit us at http://www.ipr.com
IPR INC. INTERNATIONAL PROJECT RESOURCES INC.

SAP
We specialize in:
The placement of SAP professionals - all modules, ABAP, BASIS.
Contract & Permanent Positions Available Nationwide.
We have low overhead so we can pay you top rates.
People Unlimited
1011 Sandra Rd. N., Ste. 210
Charlotte, NC 28270
Phone 704-841-1135
Fax 704-845-1002

Software Engineer: 40hrs./wk., 8-5pm. $41,000/yr. located in Tallahassee, FL. Master of Science Degree and 1yr. of exp. or 1yr. of exp. as a programmer/analyst. Must have a M.S. degree in Computer Science or Engineering with 1 yr. exp. or equivalent. Course work must include Database Theory, Distributed Database Analysis, Computer Networks and Object Oriented Programming. Should have experience in client/server technology, windows programming, RDBMS (ORACLE/SYBASE), DWL, SQL*PLUS, ISQL, PRO*C, GUI TOOLS. Must have been involved in life cycle of a project. Design, Develop, Test and Maintain software applications used to conduct business operations of law offices and professional timekeepers using Object-Oriented Designing/Programming (C++) techniques, Object Windows Library and Tools like screen painter. Also involved in specifications, design and life cycle of the software. Also design, develop and maintain relational database applications on a client/server environment using sybase database and other tools such as SQL*PLUS, PL/SQL and ISQL to solve complex engineering problems in windows/windows 95 and windows NT environment. Send Resume to: Department of Labor/ Bureau of Operations, 1320 Executive Center Drive, Atkins, Room 244, Tallahassee, FL 32399-0667 ATTN SONIA CLARK. JO# FL1546213.

Research and Development Engineer, Embedded Systems: Design, develop, & implement software & hardware features for company's Total Control Family of Network Access Products. Install & maintain network & systems in an object-oriented environment. Develop & test IP, RIP, ICMP & DNS protocols & features for the Netserver and Total Control Hub access products on 80x86 platform under P-SOS real-time kernel. Design, develop, & test PPP authentication, link control, network control protocols, & ISDN data link protocols utilizing In-Circuit Emulators, C & 80x86 Assembly languages, Line Monitors, LAN Analyzers, PROBE, CodeView, gdb, yacc, SUN SPARC, UNIX, DOS, & Windows development tools. Design, develop, & test modem device drivers for remote access products utilizing C/C++, 80x86 assembly, P-SOS real time kernel, PROBE gdb, & Line Monitor. Conduct integration & testing of heterogeneously networked systems. Prepare written research/test reports & present them to corporate management. Requires M.S. Electrical or Electronic Engin. 5.5 yrs. exp. In job offered. Sal $56,000. 40 hrs/wk. (Mo-Fr: 8:00am-5:00pm). Must have proof of legal authority to work permanently in the U.S. Mt. Prospect, IL. Qualified applicants send or fax 2 copies of resume & diploma to US Robotics, Inc. Attn: Craig Demond, Sr. Technical Recruiter, 1800 W. Central Rd., Mt. Prospect, IL 60056. Phs: 847/222-2259. Fax: 847/676-6662.

SENIOR SOFTWARE ENGINEER
Chief software architect, team leader and developer of Integrated Forecast System's forecasting algorithms on Symmetrical Memory Processors ("SMP") machines. Research design patterns for multithreading applications. Build frameworks to speed design and implementation of threaded applications. Use object oriented database management systems, object oriented analysis, design and programming ("OOA/OOD/OOP"), C++, Xmotif, pthreads and optimization techniques to develop client-server model architecture. Designed G.U.I. Mentor in OOA/OOD/OOP. Master of Science degree required in Computer Science plus 3 years of experience in the job duties described above. Salary $72,000/year for a 40 hour work week. Apply at the Texas Workforce Commission, Fort Worth, Texas or send resume to the Texas Workforce Commission, 1117 Trinity, Room 4247, Austin, Texas 78701. JO# TX7858224. Ad paid by an Equal Opportunity Employer.

see the following
EMPLOYERS
at COMPUTERWORLD's
IT Careers web site*

ALDON Computer Group
http://www.aldon.com

Armstrong World Industries
http://www.armstrong.com

Baskin-Robbins
http://careers.computerworld.com/jobs/profiles/brobbins.html

Bank One Corporation
http://www.bankone.com

Champion International Corporation
http://www.championinternational.com

CSC Consulting and Systems Integration
http://www.csc.com

Computer Management Services
http://www.erols.com/cms3905

Comsys
http://careers.computerworld.com/jobs/profiles/comsys.html

FourGen Software Technologies, Inc.
http://www.fourgen.com

Genentech, Inc.
http://www.gene.com

Litton Computer Services
http://www.littonlcs.com

Sanders, a Lockheed Martin Company
http://www.sanders.com

Titan Corporation - Systems East Division
http://www.titan.com

Wal-Mart Stores, Inc.
http://www.wal-mart.com

Wisconsin Electric Power Company
http://www.wisenergy.com

***And search for opportunities there too**

http://careers.computerworld.com

HOT

We've got the **hottest** jobs the WEB has to offer! DICE has thousands of contract and full-time listings for Programmers, Analysts and Technical professionals to fill open positions for companies nationwide.

What's even better - **we're FREE**, providing detailed information so you can find the right contract or full-time position in your area AND your area of expertise. Take a look for yourself. Please contact DICE @ www.dice.com or telnet dice.com or call up our BBS, using your computer & 1200-28.8 baud Modem, 8-N-1.

ONLINE 515-280-3423
INTERNET telnet dice.com

www.dice.com

DATA PROCESSING
INDEPENDENT
CONSULTANT'S
EXCHANGE

Don't gamble with your job search. Use DICE.

A Service of DBL Online, Inc: 515-280-1144

Ride The Wave

It could be the wave of your future. But first you have to catch it.

That's why the time is now to join the dynamic, rapidly growing Y2K 2000 service line at Ernst & Young's Management Consulting Practice—and advance your career when the phenomenon is behind us.

Ernst & Young LLP, is one of the world's leading integrated professional services firms. We're looking for highly motivated Information Technology professionals for these exciting opportunities that are located in the following cities: **Atlanta, Chicago, Cincinnati, Cleveland, Dallas, Houston, Los Angeles, New York, Philadelphia, San Francisco, and St. Louis.**

SENIOR PROGRAMMERS/ANALYSTS
We are looking for professionals to join our Y2K 2000 Service Line located at our Accelerated Conversion Center in Costa Mesa, CA, as well as in major cities throughout the U.S. You'll need 5-8 years of experience in AS/400 and UNIX applications development which should include one or more of the following: RPG III, RPG IV, RPG/400, COBOL/400, C, C++, CL, OCL, and development utilities such as PDM, SEU and SDA.

SENIOR APPLICATION PROGRAMMERS
You'll need 5-10 years of experience in MVS JCL, IMS, DB2, IDMS, CICS, TSO/ISPF/SDSF, and utilities. These positions will be located at our Accelerated Conversion Center and in major cities througout the U.S. Application maintenance and development experience is important, as well as strong analytical and problem solving skills.

You'll be responsible for leading multiple projects that perform an assessment, provide an inventory, build applications and data architectures, and develop physical groupings of systems management information. That means project management experience and the ability to interface with key executives at client organizations. Travel is required.

For positions located at our Accelerated Conversion Center, you will be part of the resident infrastructure. Minimal travel will be required. In the other positions, you will be part of a special consulting team assisting in the assessment and conversion of client software to be Year 2000 compliant. While assisting on multiple projects, you must be able to communicate within all levels of the client organization. Travel will be required.

Ernst & Young LLP, offers impressive and competitive compensation packages complete with bonus, medical benefits, and 401(K). **What's more, we'll provide you with transitional training that will develop your professional credentials, including valuable consulting skills after the Year 2000 phenomenon is behind us.** The potential beyond 2000 is outstanding.

If you would like to be part of the powerful, expanding team at Ernst & Young LLP, please send your resume, including salary history and preferred location to: **Director of Recruiting, Ernst & Young LLP, Dept. 2000, 1200 Skylight Office Tower, 1660 W. Second Street, Cleveland, OH 44133. Or FAX (216) 622-1483.** An equal opportunity employer, Ernst & Young values the diversity of our workforce, and the knowledge of our people.

ERNST & YOUNG LLP

We Invest in our People & Technology!

Best Places to Work '96

WAL★MART, the nation's leading retailer and a winner of Computerworld's Best Places to Work currently operates over 2,000 stores in the U.S. and international trade areas. Our Information Systems department is a strategic corporate resource that drives our ability as a company to consistently expand while improving customer service. We provide tremendous opportunity for Information Systems professionals at all levels that are seeking stable career opportunities in a high energy, challenging environment.

All positions are located in our corporate offices in Bentonville, Arkansas, near the beautiful Ozark Mountains, Beaver Lake, and the University of Arkansas. In Northwest Arkansas you will discover a lifestyle that combines urban amenities, easy commuting, and a progressive atmosphere while retaining the flavor of small town living. Arkansas is a wonderful place to raise a family, and we ought to know: **WAL★MART**'s corporate family is one of the biggest and best in the nation.

Your opportunity to work in a dynamic, award-winning Information Systems Division awaits you. Both entry level and experienced professionals are encouraged to apply for positions using **IBM mainframe, UNIX, PC workstation development, networking, or telecommunications.** Business Experience with **Grocery, Merchandising, Distribution, Real Estate, Pharmacy or Optical** is a plus.

SEE US AT BIGGEST CAREER FAIRS

EOE/M/F/D/V

Come and join the people that make a difference. We offer competitive salaries and benefits. If you are willing to begin a dynamic career with **WAL★MART**, please mail, fax or e-mail your resume to:

WAL★MART Information Systems Division
Attention: Recruiting, Dept. ISD9050CWF
702 S.W. 8th Street Bentonville, AR 72716-9050
Phone: (501) 277-3801 Fax:(501) 273-6879 E-mail: resumix@wal-mart.com

WAL★MART

SAP PROFESSIONALS

Fast-Growing National And International Consultancy With A Reputation For First-Class Consultant Offers

WORLD-WIDE CAREER OPPORTUNITIES FOR TOP QUALITY PROFESSIONALS

▲ *EXPERIENCED PROJECT MANAGERS*	*$ 180 K+*
▲ *TEAM LEADERS*	*$ 150 K+*
▲ *CONSULTANTS*	*$ 100 K+*

CURRENTLY STAFFING PROJECTS IN: ***US, Canada, South America and Overseas:*** *especially in these skills and industries FI/CO, Basis, ABAP/4, PM, MM, WM, PP, SD, EDI in SAP Environment, Aerospace and Retail Experience in a SAP Environment* ***LI/NYC:*** *Marketing/Recruitment and Technology Infrastructure*

Competitive Compensation With Performance Incentives for Strong Professionals With Deep Experience, Comprehensive Benefits Package

Please Fax Resumes To:516-625-0687;Telephone 516-625-9000;
E-mail: Spear16interamp.com or visit us at http://www.spearhead.com
Applications treated in strictest confidence

SPEARHEAD™
System Consultants (US) Ltd.
99 Seaview Blvd., Suite 340 Port Washington NY 11050

COMPOSER/IEF/CASE

Expert Training by KVG Consultants, Inc.

On Or Off Site Classes For
Corporate Cleints
Consulting Agencies and
Individuals

Methodology (IEM)and Full Life Cycle; Planning, Analysis, Design and Construction.

Students will become immediately productive in:
3270 Block Mode - 5 day Class
GUI/Client-Server - 10 day Class

For information and reservations call:
Phone: 602-93-1372
Fax: 602-494-4195
E-mail: KVG Admin@aol.com

COMPUTER SYS. ANALYSTS COMMNS. ENGINEERS FOR SAUDI ARABIA

1. Cobol, IMS, DB2, Telon, MVS, CICS, VSAM, Endevor, PL1, JCL, Pseudoc, Millenium
2. PowerBuilder, Oracle, GUI, C++, Motif, X-Windows, Shell Script, SQL
3. Install/program MVS/ESA and Parallel Sysplex Env.
4. Client Server, UNIX/Sun/HP, LAN/WAN, Novell, TCP/IP, Token Ring, Ethernet, Win NT, Lotus Notes
5. Engineer for Microwave & Fiber Optic Systems, MUX, SDH, Telephone Traffic
6. SAP HR Module using ABAP/4
7. HP, UNIX, SUN/Solaris
8. QA Specialist

EXCELLENT TAX FREE SALARY
THESE ARE IMMEDIATE OPENINGS
FAX YOUR RESUME TODAY TO:

THE PERSONNEL MANAGER
P.O. Box 20516
Thuqbah, Al-Khobar 31952
Saudi Arabia
Fax No. 966-3-8992960

PSC OUR STAFF MAKES US #1,

WE NEED YOU TO KEEP US THERE!

We have immediate openings in Phoenix, Arizona for highly motivated and career oriented consultants with at least 2 years experience in one or more of the following:

MAINFRAME	DISTRIBUTED/CLIENT-SERVER
• SAS/COBOL	• OOA/OOD & C++
• DB2	• Delphi
• IMS	• C/C++
• CICS	• Oracle Designer/Developer 2000
• Method/1	• Sybase or Oracle DBA
• Visasoft Year 2000 Tracker	• Web Developers - Java/CGI
	• Data Warehouse Developers
• Database Support/Recovery	• Visual Basic and/or PowerBuilder, SQL

PLEASE CALL, MAIL OR FAX RESUMES TO:

Professional Software Consultants, Inc.
ELI ZINKER
4747 N. 7th St. #424, Phoenix, AZ 85014
(800) 279-4498, Fax (602) 279-1161
pscsen41920@aol.com

Number 16CCB

Consultant. 40hrs/wk., 8am - 5pm, $43,680/yr. Design, develop, implement & test software for management information systems. Develop the Decision Support System. Data conversion. Tools: ORACLE, C/UNIX, Pro C; Visual Basic; SQL. Windows. M.S. in Computer Science as well as 6 mos. experience in job offered or as Graduate Assistant required. "Previous experience must include UNIX/C; Windows. Graduate education must include one project on data conversion and front end development using SQL, Pro C, & Visual Basic. Must have proof of legal authority to work permanently in the U.S. Send two copies of both resume and cover letter to: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 3 South, Chicago, IL 60605. Attention: Joan Sylstus. Reference #V-IL-19074-S. NO CALLS. An Employer Paid Ad.

Consultant. Design, develop, implement & support network strategies for business clients. Network design, modification & management. Tools: Novell NetWare, Windows NT, Windows 95, UNIX administration, C programming, HTML. M.S. in Computer Science or Electrical Engineering as well as 6 mos. exp. in job offered or as System Administrator required. Previous experience must include LAN to mainframe connectivity, Novell, Windows NT, PCTCP. Must hold Novell Master Certified Network Engineer certification. 40 hrs/wk. 9am-5pm, $46,000/yr. Must have proof of legal authority to work permanently in the U.S. Send resume to: Cathy Sutton, Whittman Hart, Inc., 311 S. Wacker Dr., Ste. 3500, Chicago, IL 60606, 312/922-9200. Ref# 120B

Programmer Analyst needed for computer software development and consulting firm located in Sarasota, Florida. Job duties include Analyze, program and test computer applications and provide user support. Develop and implement IMS DB/DC Systems. Use COBOL, COBOL II, COBOL 370, MicroFocus COBOL, OS/2 Warp-JCL, VSAM, Visual Basic, C, and UNIX. Applicant must have 4 yrs. exp. in the job duties described above or as a Programmer Analyst. 4 yrs. exp. must include development of IMS DB/DC Systems and use of COBOL, COBOL II, JCL, and VSAM. Will also accept B.S. in Computer Science with 2 yrs. exp. in skills listed above. 40hrs/wk. 8:00 am - 5:00 pm, Mon-Fri. $47,000/yr. Overtime varies at a rate of $22.60/hr. Send resume and cover letter to: Job Service of Florida, 2312 Gulf-To-Bay Blvd., P.O. Box C, RE: Job order number FL-1539712, Clearwater, FL 34618-4080.

SENIOR PROGRAMMER/ANALYST (2 positions) 40 hrs/wk. 8 a.m. - 5 p.m., $41,610/yr. Prepare program specifications, develop and test programs, assist in technical documentation utilizing UNIX, C, ORACLE and SQL Forms. Reqr bachelor's degree in Computer Science or Electrical Engineering or Mechanical Engineering. Reqr 1 yr expr in job offered, or 1 yr expr in Systems Analysis &/or S/W Engineering &/or Programming &/or Computer Consulting. Reqr work expr in developing application systems with UNIX, C, ORACLE and SQL Forms. Employer is a S/W development/consulting firm. Relocation to client sites throughout the U.S. for periods of 6 mos. to 2 yrs. required. "Employer paid ad." E.O.E. Send resumes to: 7310 Woodward Ave., Rm 415, Detroit, MI 48202. Ref No 142196

PROGRAMMER/ANALYST (2 positions) 40 hrs/wk 8 a.m - 5 p.m., $47,975.00/yr. Carry out analysis, design, development and testing of application programs in relational database environment utilizing IBM 3090, DB2, CICS, IMS-DB/DC, COBOL, and TELON. Reqr bachelor's degree in Computer Science, Computer Management, Electrical or Mechanical Engineering. Reqr 2 yr. expr. in job offered or 2 yr. expr. in Systems Analysis &/or S/W Engineering &/or Programming &/or Computer Consulting. Reqr work experience in development of s/w applications and with IBM hardware utilizing DB2, CICS, IMS-DB/DC, COBOL, and TELON. Employer is a s/w development/consulting firm. Relocation to client sites throughout the U.S. for periods of 6 mos. to 2 yrs. required. "Employer paid ad." E.O.E. Send resumes to: 7310 Woodward Ave., Rm 415, Detroit, MI 48202. Ref No 141696.

Consultant. Develop, design & implement software applications for business clients using client/server technology. Systems analysis. Unit testing. User training & documentation. Act as technical resource for company & clients. Tools: AS/400 RPG/400; AS/SET; BPCS SQL/400; Extermin 6; NEXGEN, CL, PDM; SEU, DFU, SDA, DBU. B.S. in Computer Science or Electrical Engineering as well as 2 yrs. exp. in job offered or as Systems Engineer required. Prior exp. must include AS/400, RPG/400, CL, SQL/400, AS/SET. 40 hrs/wk. 9am-5pm. $55,000/yr. Must have proof of legal authority to work permanently in the U.S. Send resume to: Cathy Sutton, Whittman-Hart, Inc., 311 S. Wacker Drive, Ste. 3500, Chicago, IL 60606 (312) 922-9200. Ref#120A.

Computer Project Mgr./Offshore Dev & implmt. offshore project execution methods, guide teams to est., plan & monitor proj; dev corp. metric DB on offshore proj & solve issues re: offshore/onsite team coord.; dev & conduct internal training to increase offshore proj. team effectiveness, interface w/clients, dev & mntn proc. to eval & improve satisfaction & monitor quality of offshore resources, cost/time effectiveness, support svcs. & anticipate future client needs. Sprvs. 5 sftwr engrs., travel between US & India as req'd & wk w/sr mgmt. (employer pays expenses). Must have MS/comp. sci. or related engr. math or sci. field + 4 yrs. exp/tnd job or cmprbl mgr. job BMD. Salary: $75,000/yr. Main jobsite/interview: Irvine, CA. To apply, sent this ad & resume to Box CW 186645 Computerworld Box 9171 Framingham MA 01701-9171

Consultant. Design, develop, implement & test software for management information systems. Tools: COBOL, MVS, CICS, DB2, CSP. 40 hrs/wk, 9am - 5pm. $52,000/yr. M.S. in Computer Science plus 2 yrs in job offered or as a Programmer Analyst required. Previous experience must include COBOL, MVS, CICS, DB2. Submit resumes to the following address: Dept. of Labor/Bureau of Operations, Atkins Rm 244, 1320 Executive Cntr Dr., Tallahassee, FL 32399-0667, RE: Job order number FL-1543501

see the following EMPLOYERS at COMPUTERWORLD's I.T. Careers w*

ALDON Computer Group
http://www.aldon.com

Armstrong World Industries
http://www.armstrong.com

Baskin-Robbins
http://careers.computerworld.com/jobs/profiles/brobbins.html

Bank One Corporation
http://www.bankone.com

Champion International Corporation
http://www.championinternational.com

CSC Consulting and Systems Integration
http://www.csc.com

Computer Management Services
http://www.erols.com/cms3905

Comsys
http://careers.computerworld.com/jobs/profiles/comsys.html

FourGen Software Technologies, Inc.
http://www.fourgen.com

Genentech, Inc.
http://www.gene.com

Litton Computer Services
http://www.littonlcs.com

Sanders, A Lockheed-Martin Company
http://www.sanders.com

Titan Corporation - Systems East Division
http://www.titan.com

Wal-Mart Stores, Inc.
http://www.wal-mart.com

Wisconsin Electric Power Company
http://www.wisenergy.com

***And search for opportunities there too**

Careers COMPUTERWORLD

http://careers.computerworld.com

WEBSTER™...IDG'S CAPTAIN OF INFORMATION

KNOWLEDGE. COMMUNICATION. INNOVATION. WORLDWIDE.

MEET WEBSTER™, IDG's Captain of Information (who likes to spin his wheels in more ways than one). As a member of our team, he's tapped into a global network of resource sharing and collaboration, and is helping us deliver the hottest news in two of today's most dynamic industries: Media and IT.

Since joining his 8,499+ coworkers, Webster has been proudly supporting IDG's PUBLICATIONS (*Computerworld, NetworkWorld, CIO*), now numbering more than 275 newspapers and magazines in over 75 countries for more than 90 million readers. And he has contributed to several of our over 300 BOOKS ("DUMMIES" books included) in 29 languages. Not to mention his work for our RESEARCH unit, IDC, the leading market research and analysis firm covering the computer industry. And he never misses our CONFERENCES/EXPOS (E3, COMNET...) spanning five continents.

Bottom line, Webster's all caught up in the endless opportunities of IDG. After all, no other company offers the entrepreneurial culture necessary to react, analyze and produce the level of services and products that IDG delivers on a daily basis. So if you're a "big picture" person, who likes to test new ideas and be accountable for the results, join IDG today. We'll have just as much impact on your future as you have on ours.

IDG

IDC

ACCOUNT EXECUTIVE, GROWTH ACCOUNTS

Building upon a solid base of existing customers, you will sell IDC's Information Technology-Market Research, Analysis and Consulting services to Fortune 1000 corporations. In this key role, specific duties include identifying and developing key prospects, creating and presenting custom proposals, closing new business, as well as ongoing account management for existing customers.

Qualifications include a minimum of 5 years' experience selling Information Technology related products and/or services in senior managers, including IS Directors and CIOs, at major corporations. The successful candidate must have an established record of success building relationships with major accounts. Excellent communication skills are essential, and experience selling research is a distinct advantage. BA/BS is required. **Code: C-AcctGrwth**

SENIOR RESEARCH ANALYST, MIDRANGE SERVERS

IDC's Commercial Systems and Servers Program, one of IDC's largest programs, is seeking a senior research analyst to follow the midrange server market. In this position, you will track trends and new product announcements, develop detailed company models, and help generate quarterly and annual midrange server data. Additionally, you will be responsible for writing reports on these topics, assisting with sales activities, and providing inquiry support to clients. Our ideal candidate has strong quantitative, analytical, and writing skills. **Code: C-CommSyst**

CONSULTING MANAGER, SERVICES RESEARCH

We are currently seeking a project manager for custom market research and consulting projects for the IT services industry. Projects include market and competitive analysis, market sizing and forecasting, and survey development and execution. Business development, excellent writing, prior consulting experience, and strong client and project management skills are needed for this position. 5-10 years' experience in consulting, services marketing, or strategic planning is preferred. **Code: C-ConsultSvc**

PROGRAM MANAGER, CONSUMER COMPUTING

The successful candidate must have a working knowledge of the Personal Computer industry, including vendors, technologies, products (hardware, software, peripherals), distribution channels, and consumer applications. Qualifications include consumer product marketing experience, excellent writing/analysis/presentation skills, demand forecasting abilities, and survey research expertise. This position involves development of written research on the US Home PC marketplace, segmentation analysis, responding to client inquiries, and building a public presence in the industry. You must be customer service driven as well as an effective public speaker. Additionally, you will be involved in custom consulting and business development. 5+ years' industry experience required. **Code: C-Consumer**

For the preceding IDC positions only, we prefer that you E-mail resumes to: idc_jobs@idcresearch.com or send to: IDC Human Resources, 5 Speen Street, Framingham, MA 01701. *Please reference the appropriate code in all correspondence.*

SOFTWARE INDUSTRY ANALYSTS/ MANAGERS, APPLICATIONS AND INFORMATION ACCESS GROUP

We are looking for high-energy professionals to join our fast growing research team. In this position, you will produce market research reports, respond to inquiries from our vendor, user, and investor clients, speak to the press on industry trends and present at various industry events. Requirements include technology and research experience in data warehousing and information access and/or vertical applications (an emphasis on manufacturing or healthcare is preferred). Excellent writing, presentation and data analysis skills are also required. This is a unique opportunity to grow professionally and build business while being part of a successful research team. **Code: C-Software**

For the preceding IDC positions only, we prefer that you E-mail resumes to: idc_jobs@idcresearch.com or send to: IDC Human Resources, 5 Speen Street, Framingham, MA 01701. *Please reference the appropriate code in all correspondence.*

COMPUTERWORLD

MARKETING DATABASE SPECIALIST Entry-Level

Computerworld's Information Management group is seeking a full-time, entry-level Marketing Database Specialist. Responsibilities will include processing incoming surveys, editing survey responses on-line, and some primary telephone data collection. The ideal candidate will be detail-oriented, articulate and PC literate with strong keyboard proficiency. Working knowledge of Windows, Excel and FoxPro is a plus. A marketing/market research or business degree is preferred.

Please send resume and salary expectations to: Christine Chapin, Human Resources, Code: C-MDB, *Computerworld*, Inc., 500 Old Connecticut Path, Framingham, MA 01701; fax: (508) 879-3760; E-mail: *Christine_Chapin@cw.com. No phone calls, please.*

TempWorld IDG

TEMPORARY ADMINISTRATIVE POSITIONS

IDG TempWorld, a recently developed in-house temporary pool, services the administrative and clerical needs of various IDG business units in the Framingham and Dedham areas, including Computerworld, IDC, NetworkWorld, CIO, ICE, and ETS. As a member of IDG TempWorld, you will have the chance to explore different opportunities within the fields of publishing, market research, and expositions.

Your excellent organizational and communication skills will serve you well as you build relationships with key industry professionals. In addition, your background should include experience with Microsoft Office products. Recent assignments have included: data entry, office support, receptionist, telemarketing, coordinating mailings, switchboard operation, and other administrative projects. If you are a highly-motivated, flexible individual, discover your future at IDG TempWorld.

Please send your resume to: Christine Chapin, Human Resources, Code C-Temp, IDG TempWorld, 5 Speen Street, Framingham, MA 01701; fax (508) 935-4659; E-mail: Christine_Chapin@idg.com.

At IDG, you'll not only benefit from a large company with strong entrepreneurial underpinnings, but you'll also enjoy an excellent compensation package, a creative work environment and diverse growth opportunities. Please send your resume with job code to the appropriate address listed.

Also, check out one of the coolest pages we've published — our home page — http://www.idg.com. Explore our Career Opportunities section for more detailed information. IDG is an equal opportunity employer...by choice.

Click here!

Individuals who thrive on challenges and fast-paced environments are encouraged to contact us to understand how to leverage your skills in today's market. The results can dramatically increase your salary. Opportunities exist for both full-time and contract employees. Successful candidates should have two years experience in Information Systems.

If interested, please call or fax/mail your resume.

Computer Career Consultants

Suite 1800, Meidinger Tower, Louisville, KY 40202
(800) 301-1582 Fax (502) 589-3107

Research and Development Engineer, Embedded Systems. Research, develop, & implement software & hardware features for company's Total Control System Network access products. Develop LAN (Ethernet/Token Ring) multithreading device drivers for Total Control Hub (TCH) based on 80x86 multiprocessor & Power PC hardware Design, develop, and test Booting process and File System for TCH utilizing C, Intel Assembly, Power PC Assembly gdb, In-Circuit Emulator, Logic Analyzer, Network Sniffer, Line Monitor, RISC Watch, Bus Architectures (PCI/ISA), & cross development tools. Design, develop, enhance, & test TCP/IP Frame Relay, & BOOTP protocols and features for remote access products utilizing C/C++, LAN Sleuth Network Sniffer Line Monitor In-Circuit Emulator gdb, UNIX, Windows, SUN workstations, MS Project, & cross development tools. Conduct integration of heterogeneously networked systems. Prepare written reports based on research/test findings & present them to corporate management. Rqmnts. B.S. in Electronic or Electrical Engin. 4 yrs. exp. in job offered. Sal. 49,000/yr 40 hrs/wk (Mon-Fr 8:00am-5:00pm) Must have proof of legal authority to work permanently in the U.S. Mt. Prospect, IL. Qualified applicants send or fax 2 copies of resume & diploma to US Robotics, Inc. Attn. Craig Osmond, Sr. Technical Recruiter, 1800 W. Central Rd., Mt. Prospect, IL 60056. Phone 847/222-2259; Fax# 847/678-6662.

Software Designer: Design, develop & test customized database software used in large businesses. Apply Queueing Theory (a.k.a. Theory of Waiting Lines) to develop tools for performance and capacity management for massively parallel processing systems. Prepare appropriate manuals and instruction books. Troubleshoot and debug finished product. Assist customers to install software & help train their staff in use of product. Will use Visual Basic, C++, Novell Netware, SQL, Oracle, Gupta. 40 hour wk; 9am - 5pm. Salary: $35,000/yr. Requires Bachelor degree in Comp Sci & 1 yr experience in job offered. Other special requirements: Education to include college level course in Queueing Theory or Theory of Waiting Lines. Experience to include design & development of performance & capacity management computer systems, & Oracle & Gupta database systems using SQL. Will accept degree in combo of econ & info systems in lieu of degree in comp sci. Must have proof of legal authority to work permanently in U.S. Send resume to: Dr. Boris Zibitsker, BEZ Systems, Inc., 570 Lake Cook Rd. Suite 120, Deerfield, IL 60015.

Shopping? How about these

ORACLE, SYBASE, INFORMIX, DB2, DBA'S & PL/SQL
Contract and Perm. Jobs thruout the U.S. Perm. to 75K. Contract to 120K

MS PATS AND DATS
Perm. to 65K and Contracts to 120K VANTAGE, CX4, LIFE 70, LIFECOMM

COBOL - IMPACT 2000
Our clients are really paying for IBM/MVS COBOL Programmers TX, MO, IN, CT, NE, et al

SYSTEMS PROGRAMMERS
MVS, DB2, VTAM, MONITORING, CICS, ALC, INTERNALS;

SYSTEMS ENGINEERS
Create solutions for customers. Need UNIX sys. config. networking exp. Will train in ORACLE DBAdmin.

DEVELOPMENT MANAGERS
Software Vendor wants first line managers with exp. bringing software products to market. Salary & Bonus to 140K

PROJECT DIRECTOR
Relationship manager for Software Vendor. Financial Systems to 85K

C/C DEVELOPERS
Superb C development jobs creating operating system level tools. Salaries to 110K + Bonus

AS/400 - RPG/400 OR COBOL
SYNON exp can bring high $$$ VA, NC, UT, FL, TX, MO

QUALITY ASSURANCE
Testing of DB2 or UNIX is required

PROGRAMMERS/ANALYSTS
CICS or DB2
Numerous U.S. Locations

Robert Shields & Associates

P.O. Box 890723, Houston TX 77289-0723
800-423-5383 • FAX: 281-486-1498 • email: dotbot@aol.com

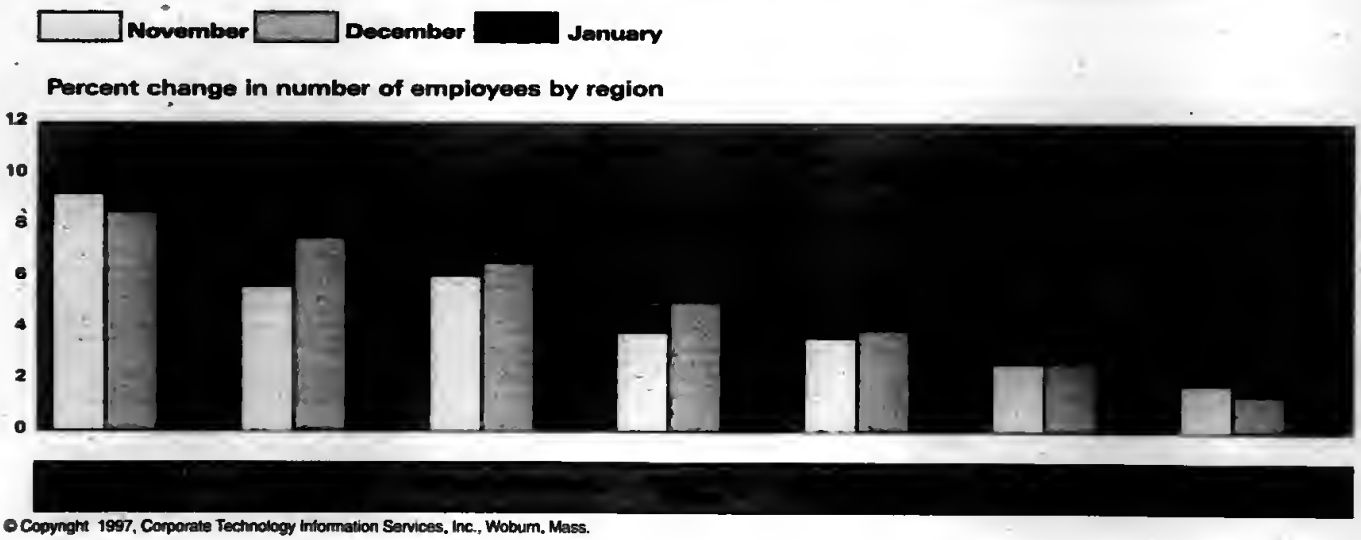
Telecommunication company seeks Application Developer Analyst 5. Responsible for analysis, design, development, testing, system integration, implementation and maintenance of data communication, telecommunication, networking and software systems in a fault tolerant multi-platform environment including IBM RS/6000 and SUN Sparcservers. Includes development of connectivity software for on-line transaction processing applications in a client-server architecture and specialized design and development of web based graphical user interfaces (GUI) using HTML/CGI/JAVA. Must know GSI/FTAM, X.25, DMS 250/DMS 300, DEX 600/DEX 600E, TCP/IP AND JAVA/HTML/CGI. B.S. degree in Electronics and Communications Engineering and 8 years experience required. Hours: 8:00 am - 5:00 pm M-F. Salary: $55,000 per year. Must have indefinite right to work in the U.S. Applicants should send two copies of resume demonstrating all minimum requirements to: Job Order Number MS 2777296, Mississippi State Employment Service, P.O. Box 13348, 5959 I-55 North Frontage Road, Jackson, MS 39236-3348.

SOFTWARE ENGINEER required VAX Systems Management including applications programming & debugging using DECforms, VAX COBOL, VAX Rdb with SQL & VAX RMS. Data management using VAX CDD/ Plus & processing control using DCL. Three years experience required in the job duties described above. Experience must include six months of writing ACMS tasks. Must be willing to relocate to various unanticipated work sites throughout USA every 4 to 10 months-Employer paid. Must have proof of legal authority to work in the U.S. Salary-$70,000/year for a 40 hour work week. Apply at the Texas Workforce Commission, Dallas, Texas or send resume to the Texas Workforce Commission, 1117 Trinity, Room 424T, Austin, Texas 78701. J.O. # TX7855979. Ad paid by An Equal Opportunity Employer.

June 8 - 11, 1997
★
Marriott Rivercenter Hotel
★
San Antonio, Texas

Reserve your place at the hottest conference of the year.

Call 1-800-488-9204 for info



© Copyright 1997, Corporate Technology Information Services, Inc., Woburn, Mass.

Tell 100,000 top Techno-MBA's & I.T. undergrads this spring.

COMPUTERWORLD Spring Campus Edition

Issue: April 1997
Recruitment Advertising Close: March 4, 1997

1-800-343-6474, x8000

Marketplace

TECHNOLOGY ROUNDUP

INFORMATION MANAGERS GETTING MORE PERSONAL

By Steve Alexander

ONE REASON WHY it's difficult to characterize personal information managers (PIM), or to select the right one to buy for an organization, is that their appeal is highly personal.

"There are an awful lot of products out there; and the reason is because the 'P' in personal really counts. Whether a PIM fits with how an individual works varies with each individual," says Chris Le Tocq, a principal analyst at Dataquest in San Jose, Calif.

PIMs are PC software products for managing sales contacts and tasks, scheduling and organizing information. They range in retail price from $50 to $300. The PIM market is highly fragmented; no player holds a majority position and most only have a small percent of the overall market share.

Some PIMs are better at one function than others, so some analysts divide PIMs into task managers that emphasize scheduling and contact managers that emphasize client contact. Other analysts say the various PIMs are all just different flavors of the same thing. They cite market leader ACT from Symantec Corp., for example, which is best known as a contact manager but also handles task management and scheduling.

PC Data, a Reston, Va., market research firm that tracks software sales, says that about 40 top PIM titles had $40 million in retail sales in the first 10 months of last year.

"In general, the PIM market players that are doing well have a metaphor that is easily understandable," Le Tocq says. "Lotus Organizer uses a notebook and tab metaphor so that when you click, the pages flip. Day-Timer Organizer [from Day-Timer Technologies] has a strong brand name from the book products, and there are certain basic features they share."

'NET GAINS

Internet connectivity for scheduling is a new feature of PIMs. For example, Starfish Internet Sidekick from Starfish Software, Inc., the latest version of the product that practically defined the PIM category in the late 1980s, allows the user to make appointments and handle scheduling over the Internet.

"PIMs are becoming more like groupware," says Judy Hodges, research manager for applications and information access research at International Data Corp. in Framingham, Mass. "There's a growing trend to share contact information, scheduling and calendaring."

Internet connectivity is vital to PIMs if they are to enhance workgroup productivity, says Mike Gotta, senior research analyst for workgroup computing strategies at Meta Group, Inc. in Stamford, Conn. "The PIMs that survive will be the ones that become components that live within Web browsers. I think PIMs will become shared schedulers and use [Hypertext Markup Language] and other standards such as JavaScript as user interfaces."

Some analysts doubt that the PIM market will be hurt by Microsoft Corp.'s move to give away its Outlook PIM as part of its Office 97 suite.

PIM sales aren't likely to suffer, because Outlook is not perceived as a strong product among individual users, Le Tocq says. "While it is effective on a corporate level, there is still a vast amount of room for improvement on the personal level."

Le Tocq notes that Outlook's predecessor, Microsoft Schedule+, has been shipping with Windows for Workgroups but hasn't been a runaway success as a standalone product. PC Data listed it as the 10th largest seller in the first 10 months of last year, with retail sales of about $928,000.

PC Data says the PIM leaders in the first 10 months of 1996 were ACT, with retail sales of $13.8 million, and Franklin Quest Co.'s Ascend and Organizer, each with about $2.3 million in sales.

Alexander is a freelance writer in Edina, Minn.

ACT, from Symantec, (800) 441-7234, www.symantec.com, is used as a contact manager by sales groups that maintain continuous client communications. PC Data says ACT's average price during the first 10 months of last year was $182.17. It had 35% of the market among the 39 PIMs PC Data tracked.

Ascend, from Franklin Quest, (800) 877-1814, www.franklinquest.com, is strong in task management. PC Data says Ascend's price over 10 months averaged $65.30. It had 6% of the market among the tracked PIMs.

Organizer, from Lotus Development Corp., (800) 343-5414, www.lotus.com, is an information manager with strong calendar features. PC Data says Organizer's 10-month average price was $84.11. It had 8% of the market among the tracked PIMs.

Ecco Pro, from NetManage, Inc., (408) 973-7171, www.netmanage.com, uses a list-making approach of outlines and folders. PC Data says Ecco's 10-month average price was $98.45. It had 5% of the market among the tracked PIMs.

GoldMine, from GoldMine Software Corp., (800) 654-3526, www.goldminesw.com, is good for contact management and companywide management. PC Data says GoldMine's 10-month average price was $195.92. It had 5% of the market among the tracked PIMs.

COMPUTERWORLD Marketplace vendor center (800) 447-0018

Software

5780 RJE Emulation	ext. 517
Client/Server Development Tools	ext. 509
Duplication Software	ext. 521
Groupware	ext. 511
Network Management	ext. 512
PC-to-Host Connectivity	ext. 520
Remote Access	ext. 513
Security	ext. 516
Terminal Emulation	ext. 518
Utilities/Antivirus	ext. 502
Year 2000	ext. 519

Computers/Peripherals

Back-up/Tape/Disk	ext. 216
Cabinets/Racks/Desktop PCs	ext. 201
Furniture	ext. 220
Kiosks	ext. 217
Mainframes	ext. 215
Midrange	ext. 219
New/Used Equipment	ext. 223
Presentation/Projectors/Panels	ext. 205
Repairs and Maintenance	ext. 221
Security	ext. 218
Servers	ext. 214
Sparc Microprocessors	ext. 222
Storage/RAID/DAT/Optical	ext. 209
Tapes/Disk Drives	ext. 207
Workstations	ext. 203

Networking/Communications

Client/Server Tools	ext. 603
Diagnostic/Testing Equipment	ext. 629
Ethernet	ext. 623
Groupware	ext. 606
Hubs	ext. 628
Internet Products/Services	ext. 634
Network Hardware	ext. 619
Network Management	ext. 607
Network Software	ext. 618
Networking/Communications TCP/IP Applications	ext. 626
Remote Access	ext. 608
Security	ext. 632
Storage/Cabinets/LAN Racks	ext. 615
Switches/Gateways/Bridges/Routers	ext. 612
Windows NT	ext. 617

Services

Consulting/Contract Programming	ext. 703
Conversions	ext. 707
Data Recovery	ext. 708
Outsourcing/Remote Computing	ext. 706
Training/Software Support	ext. 704
Year 2000	ext. 710

Internet/Intranet

Browsers	ext. 305
Consulting	ext. 308
Electronic Commerce	ext. 331
Electronic Software Distribution	ext. 342
E-Mail Gateway	ext. 311
Encryption	ext. 312
Firewalls	ext. 314
Internet Total Solutions	ext. 337
Intranet	ext. 333
ISDN Products	ext. 344
Routers	ext. 320
Security	ext. 322
Systems Network Management	ext. 323
Training	ext. 324
Web Development Tools	ext. 330
Web Measurement	ext. 326

A FREE SERVICE for our readers that's as easy as... 1 Call the Computerworld Marketplace Vendor Center at (800) 447-0018. 2 Ask for the extension listed in the product area you want information on. 3 Sit back and relax - your requested information is on the way.

Get detailed product information direct from a variety of manufacturers.

premier solutions

TO ADVERTISE, Call toll free: 1-800-343-6474 Ext. 7744

"Where IS Buyers Find Solutions"

Computerworld Marketplace

Look Bright Overnight!

Why Buy Boxlight

- Over 50 models in stock
- Knowledgeable sales people
- Projectors from $2,999
- Panels starting at $1,499
- FREE Lifetime technical support
- 30-day money back guarantee
- 11 years of experience and service

http://www.boxlight.com

BOXLIGHT CORPORATION

PRESENTING A BETTER WAY™

[redacted]

800x600 SVGA — **800 ANSI Lumens**
Power Zoom Focus — **Wireless PC Mouse**
Video Capable — **PC and Mac Compatible**

Call Today and We Will Have You Looking Good Tomorrow

Looking for a quick way to improve your image? Our new Revolution 3600 projector is the lightest, brightest high-resolution projector you can get. We can even set you up with a rental or arrange a low-cost lease. Is 10am tomorrow soon enough?

Government: (800) 497 4009
International: (360) 779 7901
Fax: (360) 779 3299
Resellers: (800) 736 6956
Rental: (800) 736 6954
Education: (800) 689 6676

CALL 1-800-762-5757 TODAY!

Monday - Friday, 6am - 5pm PST. Purchase orders accepted.
Prices subject to change. Quantities may be limited to stock on hand.

*30-day money back guarantee does not apply to Resellers. CW 1/97

Kablit Security

STOP COMPUTER TH

IN THE OFFICE — ON THE RO

- Secure computer or notebook to desk, table, etc.
- Protect data
- Lifetime warranty

Padlock Security Provided by Master Lock

Quick And Easy To Install!
Compact — Lightweight!
Available For Macintosh Computers Too!

Order Now — Call 800-451-7592

Secure-It

18 Maple Court, East Longmeadow, MA 01028, USA 413-525-7039

The particular Master® Lock Trademarks used are trademarks of the Master® Lock Company and are used by Secure-It, Inc. under license.

AutoBoot Technology In a New 'Slimmer' Size!

- Control up to 96 file servers with just 1 keyboard, monitor and mouse
- AutoBoot™ feature boots all computers without user intervention
- 1.75" unit fits into your computer rack using a minimum of space
- Push-button and keyboard controlled scanning standard
- Control all computers locally, remotely, or both
- Supports all 100% IBM compatible PCs and PS/2 or serial mouse; optional Macintosh and Sun support available
- Rear peripheral access available

SLIMLINE COMMANDER™

Cybex Computer Products Corporation
4912 Research Drive
Huntsville Al 35805 USA
1-800-932-9239 (205) 430-4030 fax
http://www.cybex.com

CYBEX. Computer Products Corporation

IBM is a registered trademark of International Business Machines Corporation. Macintosh is a registered trademark of Apple Computer, Inc. Sun is a trademark of Sun Microsystems. Cybex, Commander and [illegible] are trademarks of Cybex Computer Products Corporation.

Dealer Program Available

Made in USA

COMPUTERWORLD Marketplace

"Where IS Buyers Find Solutions"

TO ADVERTISE, Call toll free: 1-800-343-6474 Ext. 7744

software • hardware • buy/sell/lease • services

COMPUTER RACKS

212 634-4270
Fax: 212 634-4275

www.hertztec.com | 888-222-7270

ALICOMP

Which has serviced over 175 diverse clients, specializes in providing VM, MVS, VSE service to clients who need:

- OUTSOURCING
- REMOTE COMPUTING
- YEAR 2000: Mainframe Conversion Test Environment
- TAPE CONVERSIONS
- SYSTEMS INTEGRATION CONSULTING

We are the "Boutique" of the Computer Services World

(201) 319-8787 • (800) 274-5556

Distinct IntelliTerm

Highlights:

- TN3270 Emulation–Models 2,3,4 and 5 (for IBM Mainframes)
- 3179G Vector Graphics & 3279S3G
- TN5250 (24x80, 27x132) (for AS/400)
- VT52, VT100, VT220, VT320 & VT420 emulation (for DEC and UNIX Systems)
- Customizable keyboard layouts, popupds and session profiles
- VBA™ Advanced Scripting Language
- DDE, HLLAPI, EHLLAPI, WinHLLAPI and Visual Basic™
- Available for Windows 3.11, Windows 95 and Windows NT

Free Evaluation Copy Available at...

distinct

408.366.8933

http://www.distinct.com
Fax: 408.366.0153
E-mail: cworld@distinct.com
Fastfacts: 408.366.2101

Sales & Rentals

- ✓ Processors
- ✓ Peripherals
- ✓ Upgrades
- ✓ New
- ✓ Reconditioned With warranty

http://www.dempseybus.com
e-mail: dempseybus@dempseybus.com

Dempsey BUSINESS SYSTEMS
2136 Michelson Drive • Irvine, CA 92612-1304
Phone: (714) 475-2900 Fax: (714) 475-2929

Buy • Sell • Rent (800) 888-2000

Advertiser's Index

		Page
Alicomp/CBS	(800) 274-5556	100
Boxlight Direct	http://www.boxlight.com	99
Cybex Computer Products Corp.	http://www.cybex.com	99
Dempsey	http://www.dempseybus.com	100
Distinct Corp	http://www.distinct.com	100
Hergo	(800) 434-3746	100
Secure It	http://owls.com/secure-it/index.html	99

This index is provided as an additional service. The publisher does not assume any liability for errors or omissions.

ADVERTISERS INDEX

ACM 66
ADP C3
http://www.adp.com
Amdahl 73
http://www.amdahl.com
BMC Software 34
http://www.bmc.com
Cabletron 26-27
http://www.cabletron.com
CLARIION 48
http://www.clariion.com
ComNet 59
Compaq Computer Corp. 30-31
http://www.compaq.com
Computer Associates 22-23
http://www.cai.com
Digital Equipment Corp. 13
http://www.digital.com
EMC Corp. 53-55
http://www.emc.com
Encore 40-41
http://www.encore.com
FMI 20
Forté C4
http://www.forte.com
Fujitsu 78
Hewlett-Packard 18-19
http://www.hp.com
Hitachi PC 74-75
http://www.hitachipc.com
IDC 82
Information Builders 45, 47
http://www.ibi.com
Leadership Series 32/33
Logic Works 17
http://www.logicworks.com
Micro Focus 9
http://www.microfocus.com
(800) 872-6265
Micron 106
http://www.micron.com
Microsoft 1, 104, G1-G3
http://www.microsoft.com
NEC Technologies 60-61
http://www.nec.com
Novell 64-65
http://www.novell.com
Opin Systems 52
Oracle Corp. 7, 11
http://www.oracle.com
Peoplesoft 21
http://www.peoplesoft.com
(800) 947-7753
Progress Software 42
http://www.progress.com
Sagen Technology 10
SAS Institute 25, 71
http://www.sas.com
Silicon Graphics Com 38
http://www.sgi.com
Softbank Expos 50
State of the art 56
http://www.stateoftheart.com
Sybase 15
http://www.sybase.com
Syncsort 5
http://www.syncsort.com
Visio 37
http://www.visio.com
Workstation Group 46
http://www.wrkgrp.com

To have your Internet address listed here, please contact Paula Wright at (508) 820-7706
This index is provided as an additional service. The publisher does not assume any liability for errors or omissions.

HAVE A PROBLEM WITH YOUR COMPUTERWORLD SUBSCRIPTION?

We want to solve it to your complete satisfaction, and we want to do it fast. Please write to:
COMPUTERWORLD, P.O. Box 2043, Marion, Ohio 43305-2043.
Your magazine subscription label is a valuable source of information for you and us. You can help us by attaching your magazine label here, or copy your name, address, and coded line as it appears on your label. Send this along with your correspondence.

Address Changes or Other Changes to Your Subscription
All address changes, title changes, etc. should be accompanied by your address label, if possible, or by a copy of the information which appears on the label, including the coded line.

Your New Address Goes Here   Address shown ☐ Home ☐ Business

Name
Company
Address
City   State   Zip

Name | Title | Company | Address | City | State | Zip

Other Questions and Problems
It is better to write us concerning your problem and include the magazine label. Also, address changes are handled more efficiently by mail. However, should you need to reach us quickly the following toll-free number is available: 1-800-669-1002 Outside U.S. call (614) 382-3322). Internet address: circulation@cw.com

COMPUTERWORLD allows advertisers and other companies to use its mailing list for selected offers we feel would be of interest to you. We screen these offers carefully. If you do not want to remain on the promotion list please write to the following address – COMPUTERWORLD Circulation Department, 500 Old Connecticut Path, Framingham, MA 01701

CEO/President
Gary J. Beach

Senior Vice President/Finance
Matthew C. Smith

Vice President/Human Resources
Susan C. Perry

Executive Assistant to the CEO/President
Karen E. Elliott

COMPUTERWORLD

An IDG Company: The World's Leader in Information Services on Information Technology

Executive Vice President/Publisher
Michael R. Rogers
Computerworld Headquarters: 500 Old Connecticut Path, P.O. Box 9171, Framingham, MA 01701-9171
Phone: 508-879-0700, FAX: 508-875-4394

Editor
Paul Gillin

Vice-President Marketing
Bob Winter

Vice-President Consumer Marketing
Gail Odeneal

PUBLISHER'S OFFICE: *Assistant to the Publisher*/Laureen Austermann **MARKETING:** *Director, Marketing Communications*/Mary Doyle, *Senior Manager, Marketing Communications*/Elizabeth Phillips, *Manager, Trade Show & Conventions*/Audrey Abbott, *Marketing Manager*/Susan Thaxter, *Marketing Communications Project Manager*/Karen Lesko, *Marketing Specialist*/Emily Dinnien, *Administrative Assistant*/Patty White **CIRCULATION:** *Director of Circulation Management*/Maureen Burke **PRODUCTION:** *Production Director*/Christopher P. Cuoco, *Production Manager*/Beverly Wolff **SALES CLASSIFIED:** Operations Director/Cynthia Delany **DISTRIBUTION:** Distribution Manager/Bob Wescott, Traffic Manager/Pat Walker **INFORMATION SYSTEMS:** Vice-President of IS/Walter Crosby

SALES OFFICES

Computerworld Headquarters: 500 Old Connecticut Path, P.O. Box 9171 Framingham, MA 01701-9171
Phone: 508-879-0700, FAX: 508-879-0446

NORTHEAST
Regional Vice President: Sherry Driscoll. Senior District Manager: John Watts. District Managers: Isabelle Kane, Laurie Marinone. Sales Office Coordinator: Tammy Bonvert, Sales Associate: Karen Beasley, Sales Assistants: Cheryl Stratton, Diane McNeil, 470 Totten Pond Rd., 5th Floor, Waltham, MA 02154 (508) 879-0700 FAX: (617) 890-2669 Hearing Impaired: (800) 428-8244

NEW YORK & NEW JERSEY
Regional Vice President: James Hussey, Senior District Managers: Fred LoSapio, Victoria Gorin, Barry Cheney, Senior Account Executive: John Bosso, Sales & Office Associate: Susan Kusnic, Sales Associate: Valerie Luscank, Sales Assistants: Jean Dellarobba, John Radzniak, Mack Center 1, 365 West Passaic St., Rochelle Park, NJ 07662 (201) 587-0090 FAX: (201) 587-9255, (201) 587-1289 Hearing Impaired: (800) 208-0288

SOUTH-ATLANTIC
Regional Vice President: Bernie Hockswender, Sales Administrator: Jennifer Pattenaude, 1565 Woodington Circle, Suite 201, Lawrenceville, GA 30244 (770) 931-8104 FAX: (770) 931-8106 Hearing Impaired: (800) 449-6974, Senior District Manager: Mike Bachman, Sales Assistant: Mary Cavaliere, 175 Strafford Ave. #1 Wayne, PA 19087 (610) 975-4581 FAX: (610) 975-4582

MIDWEST
Senior District Manager: Sharon R. O'Brien, Account Executive: Laurie Gomes, Sales Assistant: Denice Richards, 875 N Michigan Avenue, Suite 2846, Chicago, IL 60611 (312) 943-4266 FAX: (312) 943-2214

SOUTHWEST
Sales Assistant: Brenda Shipman, 14651 Dallas Parkway, Suite 304, Dallas, TX 75240 (972) 233-0882 FAX: (972) 701-9008 Hearing Impaired: (800) 822-4918

NORTHERN CALIFORNIA
Vice-President Western Advertising Sales: Richard Espinoza, Senior District Managers: Ernie Chamberlain, Linda Holbrook-Dusay, Christine Curry, District Managers: Lisa Kowalski, Denyce Kehoe, HR Representative: Leticia Lehane, Operations Manager: Denise Hui, Account Executives: Shannon Dempsey, Andrea Zurek, Gena Haas, Sales Associates: Tamara Haney, Emmie Hung, Amy Blechman, Todd Herrold, Nina Pukonen, Bonnie Robson, Office Services: Jessica Abude, Sales Coordinators: Yvonne Zuniga, 500 Airport Boulevard, Suite 400, Burlingame, CA 94010 (415) 347-0555 FAX: (415) 347-8312 Hearing Impaired: (800) 900-3179

SOUTHERN CALIFORNIA
District Manager: Nancy Coy-Bianchi, Account Executive: Susan Davis, Sales Associate: Pat Duhl, 2171 Campus Drive, Suite 100, Irvine, CA 92612 (714) 250-3942 FAX: (714) 476-8724

ADVERTISING OPERATIONS
Display Advertising Production Manager: Paula Wright, Display Advertising Coordinators: Lisa Tanner, Gregg Pinsky, (508)-879-0700 FAX: (508) 879-0446

CUSTOM PUBLICATIONS
Boston: Director of Publishing Services/Carolyn Medeiros, Project Coordinator/Heidi Broadley, Managing Editor/Peter Bochner, Graphic Designer/Gail Varney, 500 Old Connecticut Path, Box 9171, Framingham, MA 01701-9171 (508) 879-0700 FAX: (508) 875-6310

San Francisco: Vice President Custom Publications/Elaine R. Offenbach, Sales Associate/Nikki Wilson, 500 Airport Boulevard, Suite 400, Burlingame, CA 94010 (415) 347-0555 FAX: (415) 347-8312

COMPUTERWORLD JOURNALS
Director: James Hussey, 500 Old Connecticut Path, Box 9171, Framingham, MA 01701-9171 (508) 879-0700 FAX: (508) 872-2364

Manager: Don Calamaro, 1856 Windsor Park Lane, Havertown, PA 19083 (610) 446-5372 FAX: (610) 446-5753
Display Advertising Coordinator: Peggy Hennessey, 500 Old Connecticut Path, Box 9171, Framingham, MA 01701-9171 (508) 879-0700 FAX: (508) 879-0446

MARKETPLACE ADVERTISING
Sales Manager/Michelle Reeves, Sales Assistant/Christine Tenneson, Central/Southeast Account Executive/Ann Meleney, 500 Old Connecticut Path, Framingham, MA 01701-9171 (800) 343-6474 FAX: (508) 820-0941

Western Account Executive/Claude Garbarino, 500 Airport Blvd., Suite 400, Burlingame, CA 94010 (415) 548-5544 FAX: (415) 343-5083

COMPUTERWORLD INFORMATION MANAGEMENT DIVISION
Vice President/General Manager: Richard Mikita, Vice President: John Carpenter

Computerworld VAR Database: Carol Mullen/ National Sales Manager, Account Executive/Sean Weglage, (508) 879-0700 FAX: (508) 879-0184

Computerworld Buyers Database East: Regional Manager, Database Services/Linda Clinton, (508) 879-0700 FAX: (508) 879-0184

Computerworld Buyers Database West: (415) 347-0555 FAX (415) 347-8312

RECRUITMENT ADVERTISING SALES OFFICES
Vice President/Recruitment Advertising/John Corrigan, Marketing Director/Derek E. Hulitzky, Sales Development Manager/Jay Savell, 500 Old Connecticut Path, Framingham, MA 01701-9171 (800) 343-6474

New England & Upstate New York: Regional Manager/Nancy Percival, 470 Totten Pond Rd., 5th Floor, Waltham, MA 02154 (800) 343-6474, Account Executive/Nancy Mack, (800) 343-6474

Mid-Atlantic: Regional Manager/Marty Finn, Mack Center 1, 365 West Passaic St., Rochelle Park, NJ 07662 (201) 587-0090, Account Executive/Caryn Dlott, (800) 343-6474 TDD: (800) 208-0288

South-Atlantic: Regional Manager/Katie Kress-Toplett, 8304 Professional Hill Drive, Fairfax, VA 22031 (703) 573-4115, Sales Manager/Pauline Smith (800) 343-6474

Midwest: Regional Manager/Pat Powers, 1011 East Touhy Avenue, Suite 550, Des Plaines, IL 60018 (847) 827-4433, Account Executive/Nick Burke (800) 343-6474 TDD: (800) 227-9437

Southwest: Regional Manager/Ellen Cross, 14651 Dallas Parkway, Ste. 304, Dallas, TX 75240 (972) 726-7485, Account Executive/Jim Parker, (800) 343-6474

Northwest: Regional Manager/Christopher Glenn, 246 Castas Ave., San Francisco, CA 94127 (415) 665-2443, Account Executive/Fabiola Franz, (800) 343-6474

West: Regional Manager/Barbara Murphy, 2171 Campus Drive, Ste. 100, Irvine, CA 92715 (714) 250-0164, Account Executive/Jeff Volz (800) 343-6474 TDD: (800) 203-5867

Internet Careers Site: Jennifer Arispe, Sales Associate, 500 Old Connecticut Path, Framingham, MA 01701-9171 (800) 343-6474

DIRECT RESPONSE CARDS
500 Old Connecticut Path, Framingham, MA 01701-9171 (800) 343-6474

National Accounts Director/Norma Tamburrino, Account Executive/Christine McGovern, Mack Center 1, 365 West Passaic St., Rochelle Park, NJ 07662 (201) 587-0090

ALLIANCE MARKETING
Director/Elizabeth Cooper, Sales Associate/Nancy Dillon, 500 Airport Boulevard, Suite 400, Burlingame, CA 94010 (415) 347-0555 FAX: (415) 347-8312

INTERNATIONAL DATA GROUP
Chairman of the Board, Patrick J. McGovern; **President,** Kelly Conlin; **Chief Operating Officer,** Jim Casella

Computerworld is a publication of International Data Group, the world's largest publisher of computer-related information and the leading global provider of information services on information technology. International Data Group publishes over 275 computer publications in over 75 countries. Sixty million people read one or more International Data Group publications each month.

STOCK TICKER

The Week in Stocks

Gainers

PERCENT

CrossComm	46.7
Xircom	37.6
Veloud Inc.	34.4
Intelligent Info. Systems	33.3
Integrated Micro Products(H)	32.8
Logic Works	25.1
Cyrix	19.5
Network Computing Devices	18.8

DOLLAR

Ascend Communications	8.13
Xircom	7.21
Advanced Micro Devices(H)	7.00
Veloud Inc.	6.63
Dell Computer Corp.(H)	6.44
Lattice Semiconductor(H)	5.63
Compuware Corp.	4.60
Xilinx	4.50

Losers

[illegible]

INDUSTRY ALMANAC

An Individual matter

Individual, Inc. was founded in 1989 with the idea of making it easy for executives to stay up-to-date via fax on news that is important to their business.

Today, it gathers news from more than 700 sources daily and distributes customized news feeds through electronic mail, groupware, fax and Internet servers.

But the Burlington, Mass., company has had a difficult relationship with some investors following its initial public offering (IPO) in March 1996. The stock, which had ranged from $14 per share to more than $20, fell to about $6 in July after founder and CEO Yosi Amram resigned amid disagreements regarding the company's direction. Amram sued, and in December the company reached an undisclosed settlement with him.

A class-action suit filed in November by investors alleged that the IPO didn't disclose the "profound disagreement" between the board and Amram. Individual's officials say the suit is without merit, adding that there was no disagreement at the time of the IPO. Amram currently serves on Individual's board.

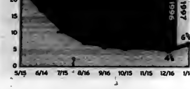
Despite the lawsuit, "I think the stock is very attractive at these levels," says James J. Pettit, an analyst at Hambrecht & Quist in San Francisco. He says Individual has $90 million in cash and has been able to attract corporate clients with its product strategy.

David Takata, an analyst at Grantal & Co. in Beverly Hills, Calif., says his firm doesn't plan to renew its intranet service from Individual, for which it pays $1,200 per year. "I can get 95% of what I'm now getting for free," Takata says.

But Beth Smith, information manager at Genetics Institute, Inc., a biotechnology company in Cambridge, Mass., says Individual's intranet service has saved her company from manual clipping and news-gathering work. "It brings a lot of news sources together in one place. And it brings it right to the end user's desktop," she says. — Patrick Thibodeau

FADE TO FLAT

Individual's stock dropped and flattened following management changes. A stockholder class-action suit is pending.



Exch	52-Week Range			Jan 17 2 pm	Wk Net Change	Wk Pct Change
COMS	81.38	33.50	3COM Corp	72.25	0.13	0.2
AIT	66.88	40.03	Ameritech Corp	60.25	2.88	5.0
T	66.88	31.63	AT&T	58.13	-0.25	-0.3
ASND	79.21	31.00	Ascend Communications	74.00	8.13	12.3
BNYN	10.71	3.25	Banyan Systems Inc.	4.25	-0.44	12.8
BBY	49.00	18.13	Bay Networks Inc.	24.25	3.75	18.3
BEL	60.[illegible]	49.50	Bell Atlantic Corp	66.25	2.88	4.5
BLS	43.50	35.25	BellSouth Corp	42.00	3.00	8.7
BRKT	42.25	12.88	Brooktrout Technology	25.00	0.50	2.0
CS	43.63	28.10	Cabletron Systems	40.13	1.50	4.5
CSCC	37.21	20.63	Cascade Communications	56.00	1.00	1.9
CGRM	24.13	11.63	Centigram Communications	11.25	0.38	2.0
CSCO	72.63	32.50	Cisco Systems Inc (H)	72.25	4.25	6.3
CLIX	9.25	3.50	Compression Labs Inc	1.94	-0.13	3.1
CMNT	10.50	4.00	Computer Network Tech	5.00	0.00	0.0
ACOM	12.75	4.75	CrossComm	8.25	2.63	46.7
DIGI	50.50	12.63	DSC Communications	20.50	1.50	8.3
FORE	44.71	23.38	FORE Systems Inc.	32.75	0.13	0.4
GDC	10.00	8.13	General DataComm Inds	10.13	-0.38	3.0
GSX	46.00	37.00	General Signal Networks (H)	45.75	1.00	2.2
GTE	49.25	37.75	GTE Corp	45.44	2.13	4.9
LU	33.13	29.75	Lucent Tech	31.75	1.63	3.2
MADGF	80.61	8.13	Madge Networks NV	12.88	1.25	10.8
MCIC	35.00	22.38	MCI Communications Corp (H)	31.00	1.75	5.3
MNPI	14.50	3.30	Microcom Inc.	12.38	-0.25	-2.0
NETM	16.88	5.25	NetManage Inc.	5.25	-0.88	14.3
NTRX	10.88	3.75	Netrix Corp	3.88	0.25	4.4
NCDI	12.63	2.88	Network Computing Devices	12.63	2.00	18.8
NWK	36.00	11.13	Network Equipment Tech.	17.75	0.75	4.4
NETG	30.25	11.00	Network General	28.75	-0.50	1.7
NN	37.25	20.25	Newbridge Networks Corp	33.25	1.13	3.5
NT	71.88	42.13	Northern Telecom Ltd. (H)	71.50	3.13	4.5
NOVL	15.63	8.71	Novell Inc	9.60	-0.13	1.0
NYN	35.25	42.00	Nynex Corp	44.63	2.00	4.2
OCTL	31.75	12.63	Octel Communications Corp	17.25	0.00	0.0
ODSI	29.00	11.25	Optical Data Systems Inc	10.00	1.00	7.4
PAC	18.00	25.88	Pacific Telesis	37.75	2.25	6.3
PCTL	44.72	20.00	PictureTel Corp (L)	20.60	3.49	15.1
PTON	7.50	2.08	Proteon Inc	2.75	-0.13	-4.3
RACO	7.00	3.50	Racotek Inc.	3.00	-0.25	-0.1
RETX	16.88	1.88	Retix	4.25	-0.75	10.0
SBC	60.25	46.00	SBC Communications	52.50	6.00	0.0
SFA	20.50	13.00	Scientific Atlanta Inc.	16.25	6.06	2.0
SHVA	87.21	10.00	Shiva Corp (L)	18.63	-0.50	2.7
FON	43.50	34.38	Sprint Corp	40.75	0.63	1.6
SMSC	10.75	3.38	Standard Microsystems Corp	8.13	-4.88	-4.8
USRX	109.50	33.00	US Robotics	70.25	-2.75	1.0
USW	37.50	27.25	US West Inc	33.50	0.88	2.7
XIRC	30.75	9.50	Xircom	20.75	7.21	37.0
XYLN	76.88	23.50	Xylan Corp	32.38	2.58	7.9

AALR	17.21	6.11	Advanced Logic Research	11.63	-0.38	3.1
AAPL	30.75	16.06	Apple Computer Inc	16.88	1.33	4.3
ASTA	8.88	3.94	AST Research Inc	4.81	-0.19	3.8
CPQ	87.13	35.88	Compaq Computer Corp	78.25	0.88	1.1
DELL	67.88	11.50	Dell Computer Corp (H)	64.81	6.44	11.0
GATE	66.25	18.00	Gateway 2000 Inc	60.44	4.00	7.8
HWP	37.75	34.38	Hewlett Packard Co	51.00	0.00	0.0
NUEI	31.00	8.75	Micron International Inc. (H)	22.63	-0.75	-3.2
NIPNY	44.00	48.00	NEC America	60.00	1.13	1.8
SGI	30.00	17.50	Silicon Graphics	27.63	1.50	5.7
SUNW	35.13	10.50	Sun Microsystems Inc	31.31	4.31	16.0

AMH	14.00	6.75	Amdahl Corp	11.38	-0.60	-4.2
DGN	19.13	3.00	Data General Corp	11.25	1.00	12.0
DEC	76.50	26.38	Digital Equipment Corp	35.00	0.00	2.5
IBM	180.38	83.13	IBM (H)	164.25	1.88	1.3
MDCD	20.21	6.25	Meridian Data Inc	7.00	-0.16	-3.6
NETF	6.50	2.25	NetFrame	2.00	-0.53	-8.0
SQNT	00.11	10.13	Sequent Computer Sys. (H)	10.00	1.38	5.4
SEQS	5.63	1.88	Sequoia Systems Inc	2.13	-0.13	-5.0
SRA	32.11	16.63	Stratus Computer Inc.	25.00	2.13	7.0
TDM	15.25	0.88	Tandem Computers Inc	13.00	-0.13	1.0
UIS	8.13	5.88	Unisys Corp	7.25	0.88	5.5

ADBE	45.13	28.50	Adobe Systems Inc	37.00	2.00	-5.1
AMSWA	7.81	1.44	American Software Inc. (H)	7.50	0.00	0.0
APLX	42.50	10.11	Applix Inc	24.44	1.13	4.8
ARSW	82.75	21.00	Arbor Software	32.63	3.13	10.0
ADSK	44.25	13.50	Autodesk Inc.	28.88	1.50	-4.9
BGSS	79.50	14.00	BGS Systems Inc (H)	27.75	3.00	12.1
BMCS	49.75	10.61	BMC Software Inc (H)	47.00	1.50	3.1
BOOL	25.25	13.25	Boole and Babbage	22.75	-0.88	1.0
BORL	21.23	4.75	Borland Int'l Inc	6.50	-0.31	-4.0
BOBJY	55.50	2.63	Business Objects	12.63	1.63	-11.4
CAYN	11.88	3.83	Cayenne Software Inc	4.44	0.13	2.8
CNTR	7.00	2.63	Centura Software	4.00	0.44	12.3
COGNF	30.80	11.13	Cognos Inc	25.00	0.25	1.0
CA	67.50	35.38	Computer Associates	44.00	2.50	8.8
CVN	16.13	5.75	Computervision Corp	7.50	0.13	1.7
CPWR	62.25	14.00	Compuware Corp	17.75	4.60	8.8
CSRE	32.00	10.75	Comshare Inc	17.00	1.75	-9.3
COSFF	11.88	6.56	Corel Corp	7.44	-3.00	-0.8
DBTI	8.25	2.63	Dataware Technologies Inc	4.13	0.50	10.0
FILE	87.00	19.13	FileNet Corp (L)	21.00	1.00	-4.3
FRTE	31.75	24.75	Forte Software	33.75	0.00	0.0
FTPS	12.88	4.86	FTP Software Inc	8.60	-0.50	7.8
HUMCF	47.63	23.00	Hummingbird Comm. Ltd.	32.13	2.13	7.1
HYSW	25.50	3.11	Hyperion Software Corp	25.50	3.00	13.3
IRIC	18.50	11.00	Information Resources (H)	13.44	0.44	4.2
IFMX	50.75	16.88	Informix Corp	21.61	1.61	2.4
INGR	20.13	0.61	Intergraph Corp	9.00	-0.75	-2.5
LEAF	10.25	1.91	Interleaf Inc	2.00	-0.00	3.0
ISLI	16.60	7.50	Intersolv Inc	8.61	0.31	2.7
INTU	69.50	25.00	Intuit Inc	34.00	1.38	3.0
TLC	10.11	11.30	Learning Co (The)	13.50	0.83	6.0
LGWX	22.25	5.25	Logic Works	8.00	1.50	25.1
MAPS	18.00	3.08	MapInfo Corp	9.00	3.13	11.1
MAYN	5.25	2.75	MathSoft (L)	1.50	-0.25	-8.7
MCAF	53.88	14.63	McAfee Associates	40.00	0.37	0.8
MENT	10.50	7.88	Mentor Graphics	10.11	6.00	6.3
MIFGY	21.25	8.38	Micro Focus	17.50	1.75	11.1
MGXI	18.63	1.00	Micrografx Inc	5.25	-0.75	12.5
MSFT	87.50	41.00	Microsoft Corp (H)	87.00	3.63	4.9
ORCL	31.88	26.50	Oracle Corp	42.00	0.88	0.8
PMTC	58.50	36.00	Parametric Technology (H)	57.50	1.44	2.0
PARQ	14.63	1.88	ParcPlace Systems Inc (L)	1.75	-0.88	17.6
PSFT	36.50	37.13	PeopleSoft (H)	53.25	3.00	8.8
PTEC	80.10	32.80	Phoenix Technologies	18.50	0.75	4.8
PSQL	11.71	3.13	Platinum Software (H)	11.44	0.31	2.4
PLAT	18.75	9.23	Platinum Technology	15.63	0.44	6.3
PRGS	29.50	12.13	Progress Software Corp	78.00	0.94	4.9
RNBO	24.25	14.63	Rainbow Technologies Inc	18.13	0.75	3.8

Exch	52-Week Range			Jan 17 2 pm	Wk Net Change	Wk Pct Change
REDB	61.00	37.75	Red Brick Systems Inc	22.50	0.38	1.7
SAPE	18.25	09.25	Sapient Corp	41.71	1.11	-2.6
SCOC	8.13	3.50	SCO Inc.	0.88	1.50	14.5
SDTI	36.38	02.63	Security Dynamics Tech.	34.30	2.63	-8.5
SQAX	39.75	17.50	SQA Inc.	28.11	3.88	12.3
SOTA	19.75	0.19	State of the Art	13.63	1.13	8.2
STW	81.50	28.19	Sterling Software Inc.	31.00	-0.13	-0.4
SDRC	37.38	13.50	Struct. Dynamics Research	24.50	2.75	12.6
SYBS	31.88	13.88	Sybase Inc.	18.50	6.86	5.0
SYMC	18.13	8.75	Symantec Corp	10.94	-0.16	-1.1
SNPS	30.00	27.50	SynOpsys	80.75	1.88	-4.4
SSAX	08.75	8.19	System Software Assoc.	11.50	-0.79	-6.3
SYSF	80.50	5.13	Systemsoft Corp	13.63	-0.38	-3.7
TRUV	8.63	2.44	Truevision Corp.	3.63	0.25	2.4
VIEW	17.50	6.88	ViewLogic Systems	12.00	0.50	4.3
VMRK	12.63	5.50	VMark Software Inc.	6.33	-0.50	7.0
WALK	15.00	7.00	Walker Interactive Systems	15.50	-0.75	-5.3
WALL	27.00	32.25	Wall Data Inc	16.06	-0.50	3.0
WANG	38.13	10.88	Wang Laboratories Inc.	21.75	0.90	1.8

AOL	71.00	22.50	America On-Line	41.88	1.50	0.8
BBN	81.13	13.63	BBN Corp	23.88	0.75	3.0
CSRV	50.50	0.83	CompuServe Corp	10.63	-0.38	-3.4
EDFY	50.75	10.38	Edify Corp.	15.25	0.75	5.2
LCOS	20.25	5.75	Lycos Inc.	15.00	1.58	11.5
NETC	44.38	12.25	Netcom On-Line	13.25	-0.50	-3.6
NSCP	38.00	34.50	Netscape Comm. Corp	42.00	-3.75	-8.0
OMKT	80.25	11.50	Open Market Inc.	19.25	1.79	-31.7
PSIX	16.88	0.75	PSINet	0.31	3.81	-29.6
QDEK	22.13	8.00	Quarterdeck Corp	4.81	-0.06	1.5
RAPT	30.25	12.75	Raptor Systems	22.29	1.75	8.3
SCUB	18.25	6.06	Secure Computing Corp. (L)	6.06	6.88	11.5
SPYG	45.30	08.00	Spyglass Inc.	12.63	0.38	3.1
YHOO	40.00	15.00	Yahoo! Inc.	38.00	6.63	34.4

AMD	34.88	10.25	Advanced Micro Devices (H)	34.38	7.00	03.6
ADI	28.75	12.75	Analog Devices Inc. (H)	27.63	0.63	8.8
CHPS	38.00	6.06	Chips and Technologies	10.25	-0.38	-27.8
CRUS	27.25	12.88	Cirrus Logic	10.79	0.38	3.3
CY	14.63	8.13	Cypress Semiconductor Corp	14.13	-0.88	-3.4
CYRX	36.50	11.50	Cyrix	24.50	4.00	19.5
INTC	140.75	40.83	Intel Corp (H)	144.88	7.88	7.6
LSI	39.63	17.00	LSI Logic Corp	34.13	4.06	11.4
LSCC	31.13	20.75	Lattice Semiconductor (H)	50.00	5.63	12.7
MCRL	80.63	32.88	Micrel Semiconductor Inc. (H)	36.75	0.19	0.7
MU	69.50	16.63	Micron Technology	37.00	-0.88	-2.3
MOT	69.11	44.13	Motorola Inc.	69.13	2.15	3.3
NSM	27.63	13.00	National Semiconductor	26.00	1.15	4.5
TXN	30.25	40.60	Texas Instruments	66.80	-1.75	-3.0
VLSI	29.25	10.38	VLSI Technology	17.63	-4.13	05.8
XLNX	46.50	24.88	Xilinx	43.13	4.50	11.7
ZLG	18.38	14.38	Zilog Inc.	28.83	2.13	8.7

APCC	31.50	7.88	American Power Conversion (H)	26.88	-0.96	1.9
ADPT	43.75	17.50	Adaptec Inc (H)	43.25	3.94	10.0
CBEX	7.63	1.30	Cambex Corp	1.75	-0.13	-6.7
CREAF	11.88	3.88	Creative Technology Ltd	13.28	0.30	0.7
RACE	08.50	3.75	Data Race Inc.	10.63	3.63	-15.6
DTM	10.63	4.13	Dataram Corp (H)	9.63	-0.25	-2.5
EMC	39.00	16.13	EMC Corp (H)	03.75	2.62	7.5
EMLX	21.50	8.50	Emulex Corp	37.13	1.90	6.2
ESCC	09.00	10.50	Evans and Sutherland	23.18	1.63	-6.5
EXBT	22.75	8.50	Exabyte (L)	31.50	-2.94	-21.8
IISLF	4.13	1.30	Intelligent Info. Systems	2.50	0.63	33.3
IOM	65.13	5.75	Iomega Corp.	16.38	-0.63	3.7
IPLS	8.00	1.25	IPL Systems Inc.	1.88	0.10	8.0
KMAG	17.00	17.88	Komag Inc.	28.60	0.25	0.9
MTSI	29.75	11.25	MicroTouch Systems Inc	26.13	2.88	11.4
PEAK	31.30	10.13	Peak Technology Group	11.63	0.75	6.9
PNCL	16.25	2.88	Pinnacle Micro Inc.	5.00	-0.50	-9.1
AQMS	6.75	3.75	QMS Inc	5.00	6.05	0.0
QNTM	34.00	10.38	Quantum Corp (H)	31.50	-0.13	-0.4
RDUS	4.88	0.44	Radius Inc.	0.44	-0.08	-18.5
SEG	49.63	18.13	Seagate Technology (H)	48.50	3.00	6.3
STK	38.50	22.00	Storage Technology	51.38	3.75	7.9
STLC	6.75	0.88	StorageLogic Corp	0.75	6.05	4.2
TEB	13.25	08.75	Tektronix Inc	50.80	1.13	2.2
WDC	79.88	16.25	Western Digital Corp (H)	60.88	4.50	8.8
XRX	38.09	50.00	Xerox Corp	57.60	7.00	8.6

AMSY	37.15	16.50	American Mgmt. Systems	22.00	1.00	-7.9
ANLY	30.50	22.00	Analysts Int'l	28.25	0.25	0.9
AUD	46.75	75.63	Auto Data Processing	44.50	1.63	1.8
BDMI	67.50	28.00	BDM International Inc.	56.00	3.00	1.8
CATP	33.59	14.63	Cambridge Tech. Partners	32.63	1.11	3.6
CEN	54.98	00.75	Ceridian Corp	38.50	-2.00	-4.8
CDO	33.88	00.00	Comdisco Inc.	31.63	0.50	1.0
CHRZ	50.00	13.00	Computer Horizons	75.00	-0.75	-2.1
CSC	80.50	80.13	Computer Sciences	77.25	-3.63	-4.6
TSK	47.50	16.75	Computer Task Group (H)	43.63	1.38	3.1
CPU	30.88	6.60	CompUSA Inc	17.63	2.65	17.5
CDAT	28.63	12.75	Control Data Systems Inc	22.25	0.63	3.6
EGGS	19.88	6.75	Egghead Discount Software	5.25	6.35	2.4
EDS	63.38	00.75	Electronic Data Systems Corp	48.75	0.50	0.8
INAC	40.63	13.50	Inacom Corp	32.63	-3.75	10.3
INEL	11.50	3.50	Intelligent Electronics	3.63	-0.63	-7.6
KEA	00.68	30.13	Keane Inc. (H)	52.50	-1.08	-5.5
MICA	38.00	7.50	Microage Inc	21.00	1.00	-7.4
PAYX	65.63	03.13	Paychex	51.25	1.88	0.8
PMS	80.88	35.18	Policy Management Sys.	49.25	0.75	1.7
REY	28.25	18.25	Reynolds and Reynolds	28.00	1.13	4.9
SCBI	50.00	34.04	SCB Computer Tech Inc.	17.73	-0.50	-2.7
SEIC	26.38	17.25	SEI Corp	20.88	-1.00	-4.6
SMED	22.13	08.25	Shared Medical Systems	47.50	2.23	-4.5
SSPE	82.88	17.00	Software Spectrum Inc	50.75	3.00	5.1
VST	09.75	9.00	VanStar Corp	10.38	-4.00	-17.8
SNDT	63.50	27.63	Sungard Data Systems	38.75	-0.50	1.3

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

Copyright Nordby International Inc., Boulder, Colorado
This information is based on sources believed to be reliable, and while extensive efforts are made to assure its accuracy, no guarantees can be made. Nordby International and Computerworld assume no liability for any inaccuracies. For information on Nordby's customized financial research services, call (303) 938-1877.

How to contact Computerworld

TELEPHONE/FAX

Main phone number ....(508) 879-0700
All editors unless otherwise noted below
Main fax number ....(508) 875-8931
24-hour news tip line ....(508) 820-8555

E-MAIL

Our Web address is www.computerworld.com.
All staff members can be reached via E-mail on the Internet using the form.

firstname_lastname@cw.com

All IDG News Service correspondents can be reached using the form.

firstname_lastname@idg.com.

LETTERS TO THE EDITOR

Letters to the editor are welcome and should be sent to:

letters@cw.com

Please include your address and telephone number.

MAIL ADDRESS

PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701

SUBSCRIPTION/BACK ISSUES

Phone ....(800) 669-1002
E-mail ....circulation@cw.com.
Back Issues ....(508) 820-8129

REPRINTS

Phone ....(508) 820-8125

CONTACTING CW EDITORS

We invite our readers to call or write with comments and ideas. It is best to submit ideas to one of the department editors as well as to the appropriate beat reporter.

Editor Paul Gillin (508) 620-7724
Executive Editor Maryfran Johnson (508) 820-8179

Department Editors/News

News Editor Patricia Keefe (508) 820-8183
Sections Editor Kevin Fogarty (508) 820-8246
Assistant News Editor Neal Weinberg (508) 820-8177
Assistant Sections Editor Michael Goldberg (508) 620-7789
Online Editor Johanna Ambrosio (508) 820-8553
Online News Editor Judy Bernstein (516) 266-2863
Associate Editor, News Mitch Betts (202) 347-6718

Senior Editors/News

Groupware, E-mail, messaging Barb Cole (619) 728-8858
LANs, operating systems Laura DiDio (508) 820-8182
Network/systems management Patrick Dryden (817) 924-9485
App development components Sharon Gaudin (508) 820-8122
IS management Thomas Hoffman (201) 587-0090
IS careers Julia King (610) 532-7599
Investigative reports Kim S. Nash (214) 716-9822
Apple, software suites Lisa Picarille (415) 347-0555
Databases Craig Stedman (508) 820-8120
Midrange hardware, Unix operating systems Jaikumar Vijayan (508) 820-8220
Internet Mitch Wagner (415) 548-5515
Internetworking Bob Wallace (508) 820-8214

Senior Writers/News

Mobile computing, social issues Mindy Blodgett (508) 820-8168
PCs, servers, net computers April Jacobs (508) 820-8121
Security, government Sharon Machlis (508) 820-8231
Mainframes, high-end storage Tim Ouellette (508) 820-8215

Staff Writers/News

@Computerworld Stewart Deck (508) 820-8155
Telecommunications Kim Girard (508) 820-8223
New products, multimedia, low-end storage Matt Hamblen (508) 820-8567
Intranets Justin Hibbard (415) 548-5515
@Computerworld Patrick Thibodeau (508) 820-8143
Client/server software, Unix apps Randy Weston (508) 628-4869

Opinions/Viewpoint

Technical Editor Charles Babcock (415) 548-5512
Viewpoint Editor Mitch Betts (202) 347-6718
Staff Columnist Frank Hayes (503) 252-0100

Department Editors/Features

Technology reviews/Buyer's Guide James Connolly (508) 820-8144

Senior Editors/Features

Buyer's Guide Cathleen Gagne (508) 620-7729
Careers David B. Weldon (508) 820-8166
In Depth Steve Ulfelder (508) 620-7745
Management Robert L. Scheier (508) 628-4931
Managing Allan E. Alter (508) 620-7714
Special reports Gary H. Anthes (202) 347-0134

Associate Editors/Features

Managing Rick Saia (508) 820-8118

IDG News Service Correspondents

Paris bureau chief Marc Ferranti (33) 1-4904-8001
Paris correspondent Jeanette Borzo (33) 1-4904-7917
Munich correspondent Torsten Busse (49) 89-811-6057
UK correspondent Ron Condon (44) 181-460-0944
Tokyo correspondent Rob Guth (81) 33-358-6122
Taipei correspondent Terho Uimonen (88) 62-920-8525

Research

Bob Fink, senior research manager (508) 820-8118; Kevin Burden, senior researcher; Laura Hunt, research analyst; Amy Malloy, assistant researcher; Stefanie McCann, senior graphics coordinator; Matt Keels, online researcher.

Copy Desk

Ellen Fanning, managing editor (508) 820-8134; Roberta Fusaro, assistant managing editor; Christina Arcardi Maguire, Jamie Eckle, senior copy editors; Michelle Davidson, Kimberly Gillard, senior production copy-editors; Pat Hyde, David Ramel, Jeremy Selwyn, Keith Shaw, copy editors; Scott Burnell, Monica Sambataro, online copy editors.

Graphic Design

Tom Monahan, design director (508) 820-8218; Janell Genovese, Mitchell J. Hayes, Nancy Kowal, senior graphic designers; Carol Lieb, photo researcher/editor; David Waugh, Mary Beth Welch, graphic designers; Rich Tennant, John Klossner, cartoonists.

Administrative Support

Linda Gorgone, office manager (ext. 8176); Connie Brown (ext. 8178), Lorraine Witzell (ext. 8139), Rita Jones (ext. 8172), editorial assistants; Chris Flanagan, West Coast editorial assistant, (415) 548-5503.

Computerworld Magazines Group

(Includes Premier 100, Campus Edition, Best Places to Work, Leadership Series, Intranet Series, Electronic Commerce Journal and vertical industry journals.)
Alan Alper, editor (508) 820-8115; Mary Brandel, executive editor; Anne McCrory, Catherine McCrorey, Joyce Chutchian-Ferranti, managing editors; Kimberlee A. Smith, assistant managing editor and online coordinator; Stephanie Faucher, art director

COMPUTERWORLD

@Computerworld is our World Wide Web site. On it, we publish daily news and feature stories that supplement our print coverage. We also have special audio features, such as interviews with industry notables, and the @Computerworld Minute, which is an audio version of the day's top news.

A few times each week, we also have Links listings. These are resources related to online and/or print stories. We also have polls and forums that you must register for to access. The rest of the site is accessible without registering.

Contact: Johanna Ambrosio, Online Editor, (508) 820-8553 or johanna_ambrosio@cw.com.

Companies in this issue

Page number refers to page on which story begins. Company names can also be searched at www.computerworld.com.

3Com Corp. 8,10,20,52
Aberdeen Group, Inc. 4,10
Acces I/O Products, Inc. 40
Acces Computer Group Ltd. 6
Advanced Micro Devices, Inc. 8
Alaska Legislative Affairs Agency 43
Allegiance Healthcare Corp. 49
Alternative Technologies, Inc. 3
Amdahl Corp. 4,39
America Online, Inc. 2
American Eagle Insurance Co. 43
American President Lines 57
Ameritech Corp. 24
Amati, Inc. 83
Andersen Consulting 69
Apache 8
Apertus Technologies, Inc. 16
Apple Computer, Inc. 14,16,43,107
Arizona Department of Revenue 69
Arizona State University 10
AT&T Corp. 18,24
B.C. Hydro 57
Baan Co. 4,46
BackWeb Technologies 1
Bally's Park Place 24
Barnes & Noble Bookstore 87
Bay Networks, Inc. 10,20,52
BEA Systems, Inc. 87
Bell Atlantic Corp. 24
BellSouth Corp. 24
Bendata, Inc. 46
Bernard Hodes Advertising 76
Bluestone Software, Inc. 87
Boole and Babbage, Inc. 16
Borland International, Inc. 43
Boston Edison Co. 49
British Telecommunications PLC 24
CallBack Software, Inc. 49
Candle Corp. 16
Casual Corner Group, Inc. 2
Caterpillar, Inc. 84
Century 21 Real Estate Corp. 57
CheckFree Corp. 8
Chevron Information Technology Co. 57
Cisco Systems, Inc. 20
Clarity Software, Inc. 65
Columbus Lines USA, Inc. 39
Compaq Computer Corp. 6,8,39
Computer Associates International, Inc. 6,49
Computer History Association of California 83
Computer Management Consultants, Inc. 69
Computer Museum 83
Concord Communications, Inc. 10,52
Consolidated Edison Company of New York 1
Corel Corp. 12
Countrywide Home Loans 52
Credit Suisse First Boston Corp. 16
CyberSource Corp. 63
D. H. Brown & Associates 39
Daisy Data, Inc. 40
Demark International, Inc. 39
Data General Corp. 39
Dataquest 18
Day-Timer Technologies 98
Dayton Hudson Corp. 69
Dell Computer Corp. 6,39
Deloitte & Touche 69
Digital Consulting, Inc. 72
Digital Equipment Corp. 8,39,83
Disk/Trend, Inc. 39
Document Control Systems, Inc. 51
Donaldson, Lufkin & Jenrette Securities Corp. 43
Dunlop Tire Co. 3,43
Dynatek, Inc. 63
E. M. Warburg, Pincus and Co. 68
Electronic Data Systems Corp. 49
EMC Corp. 39
EMI Music 14
Entergy Corp. 4
Ernst & Young 72
Executive Software, Inc. 49
Federal Aviation Administration 8
First Consulting Group, Inc. 67
Fitch Investors Service 8
Flat Connections 83
Franklin Quest Co. 98
Frontier Corp. 10
Frontier Software Development, Inc. 10
Ga Research, Inc. 1
Gartner Group, Inc. 1,6,39,69
GE Capital Corp. 2
GEC-Marconi Hazeltine 67
General Electric Co. 2
General Motors Corp. 84
General Signal Networks 39
Global Knowledge Network, Inc. 8
GMAC Commercial Mortgage Corp. 8
Goldman, Sachs & Co. 49
Graphic Media, Inc. 69
GTE Corp. 24
HCL America 1
HDS Network Systems, Inc. 8
Hewlett-Packard Co. 6,8,10,39,87,89
Hitachi Data Systems Corp. 4
Hurwitz Group, Inc. 43
IBM 1,4,6,8,14,16,58,43,108
Illuminata, Inc. 6,49
Infoplex Corp. 4
Information Technology Association of America 72
Informix Software, Inc. 8,43
Intel Corp. 6,8,39,43,49,107
International Data Corp. 6,39,49
International Network Services, Inc. 10
International Software Group, Inc. 43
Internet Shopping Network 57
Interse Corp. 63
Intuit, Inc. 8
Inverse Network Technology, Inc. 2
Iona Technologies, Inc. 39
J. D. Edwards & Co. 4,89
JavaSoft 107
Joseph E. Seagram & Sons, Inc. 14
Kaiser Permanente 69,70
Kelly Services, Inc. 39
Kennebec Health System 1
Kentucky Department of Education 57
Kredietbank 39
L. L. Bean, Inc. 29
Lake Superior State University 108
Land's End 29
Lantronix Systems, Inc. 52
Lawson Software, Inc. 3
Lids 1
Lockheed Martin Tactical Aircraft Systems 49
Long's Drug Stores of California, Inc. 49
Los Angeles Times 16
Lotus Development Corp. 1,3,10,14,87
Malden Mills Industries, Inc. 1
McAfee Associates, Inc. 1
McDonald's Corp. 52
McDonnell Douglas Corp. 57
MCI Communications Corp. 24,49
McKesson Corp. 43
Microsoft Corp. 1,3,6,8,12,14,29,43,49,57,58,79,98,107
Midrange Open Business Strategies 1
Migration Software Systems Ltd. 8
Millipore Corp. 3
MIT 107
Mitsubishi Electronics America, Inc. 49
Motorola, Inc. 2
Nabisco, Inc. 57
NASA Ames Research Center 83
National Center for Supercomputing Applications 57
National Science Foundation 3
NCR Corp. 6
NetFrame Systems, Inc. 8
NetObject Inc. 58
Netscape Communications Corp. 12,14,79,107
Netspeak Corp. 57
Network Computer Devices, Inc. 8
Network Solutions, Inc. 3
Next Software, Inc. 43
Nortel, Inc. 16
Novell, Inc. 10,39
Nynex Corp. 24
Object Management Group 67
Onsight Technology Education Services 89
Oracle Corp. 3,43,107
Oregon State University 57
Patricia Seybold Group 14
PeopleSoft, Inc. 3
Plant-Wide Research Group 29
Polaroid Corp. 8
Price Waterhouse 72
Pro Player Corp. 1
Project 2000, Inc. 72
Quantum Corp. 67
Radnet, Inc. 14
Ram Partners LP 16
Real Time Integration, Inc. 51
Richter Systems, Inc. 1
Rogers & Wells 12
Robin Systems, Inc. 1
San Francisco Computer Museum 83
San Francisco Gas Exchange 49
Sanchez Computer Associates, Inc. 67
Sanford C. Bernstein & Co. 16
SAP AG 3,4
Sapient Corp. 67
Saratoga Systems, Inc. 63
SBC Communications, Inc. 24
Seagate Technology, Inc. 29
Sensable Technologies 84
Sequent Computer Systems, Inc. 39
Siemens Pyramid Information Systems, Inc. 39
Silicon Graphics, Inc. 84
Simon & Schuster 14
[illegible] 29
Smithsonian Institution 83
Software Productivity Research, Inc. 1
SEA, Inc. 29
St. Jude's Children's Hospital 20
Starfish Software, Inc. 58
Starlight Networks, Inc. 8
Starwave Corp. 57
State Street Bank & Trust Co. 20
Storage Technology Corp. 39
Sun Microsystems, Inc. 3,6,8,39,43,89
Sybase, Inc. 67,46,49
Symantec Corp. 49,98
Syntel, Inc. 69
Talarian Corp. 16
Tata Consultancy Services 1
Teleport Communications Group 24
[illegible], Inc. 57
The Boeing Co. 57
The Clipper Group, Inc. 4
The Connell Group, Inc. 69
The Devon Group 2
The Good Guys 8
The Quality Connection 2
The Tribune Co. 67
The Yankee Group 6,52
[illegible] 14
TicketMaster Group, Inc. 57
Toshiba America Information Systems, Inc. 39
TradeLink LLC 43
Tympani Development, Inc. 65
U.S. Department of Labor 67,89
UDP Consulting Services 49
Union Pacific Railroad 1
Unisys Corp. 3
University of Illinois 84
University of Oregon 20
University of Southern California 20
US Air 12
US West Communications, Inc. 24
Utah State University 49
Vignette Corp. 58
Visioneering Research Laboratory 108
Wallop Software, Inc. 58
WebFlow Corp. 14
Wheat First Butcher Singer 24
Wonderware Corp. 29
WorldCom, Inc. 24
Wyse Technology, Inc. 6
Xerox Corp. 49
Yellow Corp. 69
Yellow Technology Services 69
Zona Research, Inc. 8
Zurich Insurance Group, Inc. 6

Microsoft SQL Server

thinks you should consider spending a couple million on your data warehouse.

(Then reject that idea, chuckle heartily to yourself and come visit our Web site.)

There are a couple of things that make Microsoft® SQL Server™ the smartest foundation for your data warehouse solution. First is cost: a Microsoft SQL-based solution will avoid the (potentially huge) setup and administration expenses associated with the other, more complicated approaches. Second, there's the Microsoft Alliance for Data Warehousing, an association of industry leaders formed to help foster standards and ensure interoperability across products and systems. Thanks to the Alliance, you know Microsoft SQL will integrate with other products. Which in turn saves you time and trouble and, come to think of it, more money. All told, Microsoft SQL Server is the simplest, most flexible and most affordable approach to data warehousing on the market. For all the details, visit our Web site at www.microsoft.com/sql/.

Microsoft®

Where do you want to go today?® www.microsoft.com/sql/

BUSINESS OBJECTS · ESS · INFORMATICA · NCR · Pilot Software · PLATINUM · Praxis International Inc. · SAP

©1997 Microsoft Corporation. All rights reserved. Microsoft and Where do you want to go today? are registered trademarks of Microsoft Corporation. Other company names may be the trademarks of their respective owners.

Retailers score big time

CONTINUED FROM PAGE 1

that make up the $10 billion licensed sports industry business, it's the latter. They win whether it is Bill Parcells or Mike Holmgren who is carried off the field as the victorious coach after Super Bowl XXXI in New Orleans Sunday night.

Just as the New England Patriots and Green Bay Packers have worked to build Super Bowl teams, merchandisers Lids, Pro Player Corp. and others have toiled to build the infrastructure that allows them to compete at the top level.

SPEED IS EVERYTHING

"Fans are sucking championship hats out of our stores," said Peter Ross, MIS director at Lids, a Westwood, Mass.-based chain that has 106 stores in 23 states, including the Super Bowl team states of Massachusetts and Wisconsin. "In this business, you win by having hats available as soon after a game as is humanly possible."

That is accomplished by building information systems that are truly flexible in a market that defines just-in-time manufacturing. Most retailers cover their bets by placing orders for Super Bowl championship gear for both teams.

But some retailers want only gear for the eventual Super Bowl champions. The same goes for the cottage industry of sports gear resellers that pops up after the championship games (see photo at right).

"Flexibility in this case is the key to supporting merchandisers' ability to bring products to the masses more quickly and less expensively," said Matthew Giannini, an analyst at Ga Research, Inc. in Mountain View, Calif. "Lots of merchandisers find it tough to plan until the last minute, which isn't really planning. That delays product delivery."

Charlie Gallo outlined Pro Player's game plan.

Retailers are notified in December by the Hudson, N.H., supplier to either call in orders or visit warehouses near the four championship teams. There, they can view a variety of color shirt designs on laptops.

The retailers also can call up Pro Player's World Wide Web site (www.proplayer.com) and view a subset of the designs. The company doesn't display all the designs for fear they will be copied by unlicensed competitors.

The sports apparel industry demands flexible information systems to get merchandise for winning teams on display as soon as possible after a big game

Orders are entered on the laptops and travel over regular analog dial-up lines to Pro Player's IBM AS/400, which tabulates them and sends back an estimate of when shirts will be ready. The orders are then sent back to the printing presses at the warehouses.

"We predict that if the Patriots win the Super Bowl, retailers will have vans backed up here at midnight Sunday so they can have the shirts in their stores Monday morning," said Gallo, vice president of MIS, customer service and production/scheduling at Pro Player. "If Green Bay wins, that'll happen in Wisconsin."

Lids' game plan relies on PCs with special point-of-sale software in each of its stores. The PCs are used to create and send orders over dial-up lines to an IBM RS/6000 at its headquarters, which runs an automated merchandising system from Richter Systems, Inc. in New York.

"It's a differentiator that we use PCs in stores instead of a proprietary cash register configuration because it lets us send urgent E-mail messages to the stores that couldn't be displayed on regular registers," Ross said.

Lids is considering running Microsoft Corp. and Lotus Development Corp. applications on the PCs.

CD-ROM Super Bowl simulations show Cheeseheads rule

▸ *Three leading games back up the oddsmakers*

By Rick Saia

NO MATTER WHICH way you look at Super Bowl XXXI, the experts seem pretty smart — at least when it comes to some leading computer games playing out the Packers/Patriots matchup.

After Green Bay and New England advanced to the big game in New Orleans, I took three CD-ROM games and played a Packers/Patriots simulation on each.

The overwhelming conclusions: The Pack is back.

Green Bay quarterback Brett Favre knows how to throw touchdown passes.

New England quarterback Drew Bledsoe, meanwhile, has trouble moving the ball down the field.

NEW ORLEANS, LOUISIANA
SUPERDOME

SIMULATION 1

Front Page Sports Football Pro '97
Sierra On-line Inc., Bellevue, Wash.
www.sierra.com

Green Bay 14, New England 6

I clicked on Quick Start for a New England/Green Bay game in Green Bay (the Packers are technically the Super Bowl's "home" team). Luckily, the given weather conditions were sunny with a slight breeze.

As for the game (the computer called all plays), both defenses dominated.

Green Bay scored first in the second quarter after the Packers stopped Patriot running back Curtis Martin on fourth-and-one from the New England 39.

Two plays later, the Packers scored on a Favre touchdown pass to take a 7-0 lead. New England closed it to 7-3 before halftime on an Adam Vinatieri field goal.

In the fourth quarter, Vinatieri kicked another, making it a one-point game. But the Packers, on the ensuing drive, drove 72 yards in 11 plays, all on the ground, and ate up more than seven minutes. Edgar Bennett ran in from the Patriots' 6 for the second touchdown.

SIMULATION 2

Madden '97
Electronic Arts, San Mateo, Calif.
www.easports.com

Green Bay 44, New England 13

With a PC calling the plays, the game moved quicker than a typical NFL contest. It took the players no more than three seconds in the huddle before scurrying up to the line of scrimmage.

> Green Bay quarterback Brett Favre knows how to throw touchdown passes

I stopped the game midway through the third quarter, after the Patriots had cut the Packer lead from 44-6 to 44-13 (for Patriots fans, shades of Super Bowl XX).

The Packers' offense dominated. Favre passed for more than 400 yards despite throwing three interceptions.

Bledsoe, meanwhile, threw four interceptions, one of which was returned for a touchdown.

SIMULATION 3

NFL Quarterback Club 97
Acclaim Entertainment, Inc.
Glen Cove, N.Y.
www.acclaimnation.com

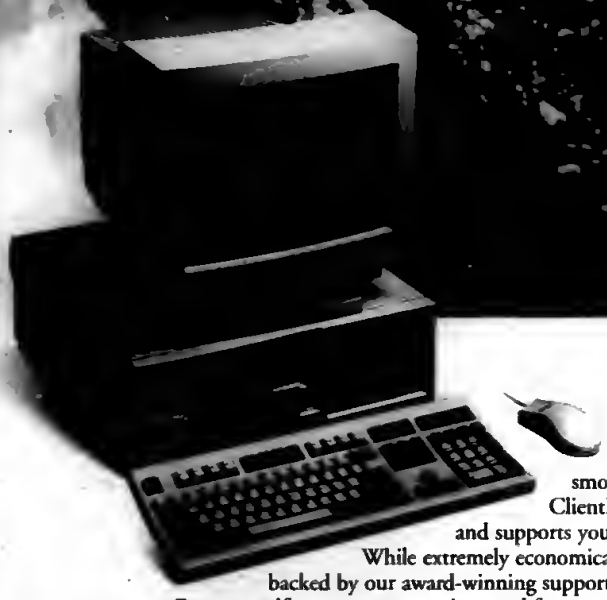
Green Bay 22, New England 0

In this game, simulated in a domed stadium with artificial turf, I played for the Pats and a colleague called the Packers' plays.

Needless to say, nothing worked for New England here. The Packers sacked Bledsoe for a safety in the first quarter. The offense scored the rest of the points (two on Favre passes) in the second quarter.

Periodical postage paid at Framingham, Mass., and other mailing offices. Posted under Canadian International Publication agreement #0585697. Computerworld (ISSN 0010-4841) is published weekly, except a single combined issue for the last two weeks in December by Computerworld, Inc., 500 Old Connecticut Path, Box 9171, Framingham, Mass. 01701-9171. Copyright 1997 by Computerworld, Inc. All rights reserved. Computerworld can be purchased on microfilm and microfiche through University Microfilms, Inc., 300 N. Zeeb Road, Ann Arbor, Mich. 48106. Computerworld is indexed. Back issues, if available, may be purchased from the circulation department. Photocopy rights: permission to photocopy for internal or personal use is granted by Computerworld, Inc. for libraries and other users registered with the Copyright Clearance Center (CCC), provided that the base fee of $3 per copy of the article, plus $.50 per page is paid directly to Copyright Clearance Center, 27 Congress Street, Salem, MA 01970. Reprints (minimum 500 copies) and permission to reprint may be purchased from Sharon Bryant, Computerworld, Inc., 500 Old Connecticut Path, Box 9171, Framingham, Mass. 01701-9171. Requests for missing issues will be honored only if received within 60 days of issue date. Subscription rates: $3 a copy. U.S. — $48 a year. Canada — $110 a year. Central & So. America — $150 (surface) a year. Europe — $295 a year; all other countries — $295 a year. Subscriptions call toll free (800) 669-1002. POSTMASTER: Send Form 3579 (Change of Address) to Computerworld, Box 2044, Marion, OH 43305.

TAKE THE DAY OFF.



Your business decisions just got easier.

Go ahead. Take some time off. With the **ClientPro**™ series from Micron Electronics™, you won't have to fight an uphill battle to make your network run smoothly. Reliable, easily expandable, simple to maintain and network ready—the ClientPro lets you relax. This stable, flexible client platform adapts to your evolving network and supports your critical projects over the long haul. Plus you get excellent value for your money. While extremely economical, the ClientPro boasts the highest quality components and solid engineering. And it's backed by our award-winning support and industry-leading **Micron Power**™ **warranty**. Don't be shackled to your network. Free yourself to manage operations and focus on business. Call Micron and order the ClientPro—then feel free to take the day off.

ClientPro P120

- Intel 120MHz Pentium® processor
- 256KB pipeline burst cache, flash BIOS
- 16MB EDO RAM
- 3Com® 3C509 ethernet ISA NIC (BNC and RJ-45)
- 3.5" floppy drive
- PCI 64-bit graphics accelerator, 2MB EDO RAM
- *Tool-free* minitower or desktop
- Microsoft® Mouse, 104-key keyboard
- MS-DOS® 6.22/Windows® for Workgroups 3.11
- Microsoft Works preinstalled
- 5-year/3-year Micron Power™ warranty

- 1.2GB EIDE hard drive
- 14" Micron 14FGx, .28dp (12.9" display)

$1,499 — BUS. LEASE $51/MO.

- 2.1GB EIDE hard drive
- 15" Micron 15FGx, .28dp (13.7" display)

$1,699 — BUS. LEASE $58/MO.

With Intel 133MHz Pentium processor ..... add $50

intel inside PENTIUM PRO PROCESSOR

intel inside pentium

ClientPro 2 180

- Intel 180MHz Pentium® Pro processor
- 256KB internal cache, flash BIOS, DMI support
- 16MB EDO RAM
- 1.2GB EIDE hard drive
- 3Com® 3C509 ethernet ISA NIC (BNC and RJ-45)
- 3.5" floppy drive
- PCI 64-bit graphics accelerator, 2MB EDO RAM
- 15" Micron 15FGx, .28dp (13.7" display)
- *Tool-free* minitower or desktop
- Microsoft Mouse, 104-key keyboard
- Microsoft Windows NT® Workstation 4.0
- Microsoft Works preinstalled
- 5-year/3-year Micron Power warranty

$1,999 — BUS. LEASE $68/MO.

900 E. Hyatt Ave., Nampa, ID 83687 • Mon-Fri 6am-10pm Sat 7am-5pm (MT) • International Sales Hours: Mon-Fri 6am-7pm (MT) • Phone: 208-893-3434 • Fax: 208-893-3424 • Purchase Order Fax: 208-893-8992
Technical Support Available 24 Hours A Day—7 Days A Week • Technical Support Phone: 800-708-8TPC
Technical Support E-mail: techsupport.mei@micron.com

©1997 Micron Electronics, Inc. All rights reserved. Micron Electronics is not responsible for omissions or errors in typography or photography. All specifications are subject to availability. Prices and specifications may be changed without notice; prices do not include shipping and handling. 30-day money-back policy does not include return freight and original shipping/handling charges; applies only to Micron brand products, and begins from date of shipment. All sales are subject to Micron Electronics' current terms and conditions of sale. Lease prices based on 36 month lease. The MMX Inside Logo and Pentium are registered trademarks, and MMX is a trademark of Intel Corporation. Microsoft Windows, Windows NT and the Windows logo are registered trademarks of Microsoft Corporation. All other service marks, trademarks and registered trademarks are the property of their respective companies. WADV-001CPW0097-0122

MICRON™ ELECTRONICS, INC.

800-214-6667

http://www.mei.micron.com

Micron Power Warranty & Support

- 5-year limited warranty on microprocessor and main memory
- 3-year limited parts-only system warranty
- 1-, 2- or 3-year optional on-site service agreement for Micron desktop systems
- 30 days of free Micron-supplied software support for Micron desktop systems
- 30-day money-back policy
- 24-hour technical support

The foregoing is subject to and qualified by Micron's standard limited warranties and terms and conditions of sale terms and conditions of sale may vary for specific configurations. Copies of the limited warranties may be obtained on our Web site or by calling Micron.

COMMENTARY

How Apple can win

David Coursey

Don't you just love a good story? I do, and I'm convinced that's what Apple needs right now: a new story to usher in a new operating system to a cynical world.

I'm a big believer in stories as a way of explaining who and what we are. Companies are just like people in that regard. The proper story helped propel Apple to greatness, and now a new story is needed to explain the "new" Apple. Ideally, the story would attract *Computerworld* readers to Apple's next-generation operating system, code-named Rhapsody. At the very least, it must prevent them and their IS brethren from turning up their noses, effectively making Rhapsody uncool or even dead on arrival.

And because Apple will generate a story whether it wants to or not, I'd like to suggest the following one:

Rhapsody should be "the operating system for the intranet," specifically designed to host Web-based applications on Intel, RISC and PowerPC platforms, with the same binaries able to run on all three.

That's the short version — a positioning statement of sorts — but it needs support. Anybody can make such a statement; how can Apple make it come true?

Well, it can't — at least not alone. To be the operating system for the intranet, Apple will need help from companies that already *are* the intranet. That means vendors such as Netscape, Oracle, JavaSoft and a few others need to think of Rhapsody the same way everyone at Microsoft thinks of Windows 95 and Windows NT: It's ours, and we bend it to do what we need done.

Popularizing Rhapsody won't be easy. Apple should probably send some megabucks to Netscape to help hire programmers to port SuiteSpot to Rhapsody. Oracle might need help getting its databases to run on the new operating system, as databases and tools are essential to intranet developers. And Rhapsody has to make Java look really good, especially for developing server applications.

Software from three companies doesn't a platform make, though it's generally agreed that desktop publishing — early versions of Adobe's PageMaker, specifically — kept the Macintosh alive in its early days.

If Netscape and Apple put their minds to it, the Rhapsody version of SuiteSpot — coupled with Oracle — could be an excellent intranet and client/server application platform. Both companies have big customer bases. And Next Software, Apple's new acquisition, has the building blocks for a great system.

At the same time, Rhapsody must be easier to install and maintain, and it must have a cost-of-ownership advantage over Windows NT. Putting the Macintosh interface atop Rhapsody can achieve some of that, but packaging and pricing will contribute as well.

Who will buy Rhapsody? It depends, of course, on what Apple can accomplish and in what period of time. There are a reasonable number of people looking for an NT alternative that isn't Unix. And NT customers themselves will benefit from the innovation and lower pricing that competition brings.

If Apple can accomplish this — and it's a tall order — then Rhapsody gets a story that at least some corporate customers will listen to. Whether they'll buy it is another story. But without a good story, Apple loses all hope of a happy ending.

Coursey wrote this column while he was sick with the flu. If it doesn't make sense to you, please blame the cold medication and not Coursey. He is accepting get-well E-mail at david@coursey.com. When he recovers, David will return to editing his newsletters and being his usual charming self. But until then, watch out!

What's the cost of not learning?

Charles Babcock

Learning may be something you thought you left behind once you escaped from calculus class. But not so fast. We are now all functioning in a world where learning is a continuous process — not just a classroom experience.

Technology and the Internet are creating a modern-day gold rush of opportunity. Those who learn quickly gain immense advantages over those who don't. And learning quickly may have as much to do with your habits in using technology as with your IQ. In narrowly decided races, the aid to learning provided by the desktop PC can be a deciding factor. If your technology habits reinforce your learning habits, a whole new element enters into the valuation of the cost of ownership of desktop technology.

And a new challenge arises inside the organization. How does it maximize technology tools for learning? When are they an aid vs. a distraction? We need to understand how our organization learns collectively and whether it learns any faster when more workers are equipped with PCs. My intuitive sense is that active PC users, with their electronic mail, Web browsers and collaborative groupware, are learning faster than those who aren't similarly equipped. But I haven't seen any figures from the think tanks on that.

Learning in organizations doesn't occur haphazardly, according to an article in the Winter 1995 edition of MIT's *Sloan Management Review*. Some organizations encourage it by the way they are structured; others miss the boat. The article cites these points:

- It matters whether knowledge in an organization is viewed as a possession of individuals or something to be shared and made public. Does top management exemplify information sharing or information hoarding?
- Is there a constant dialogue going on within the organization over the quality of its product and the nature of its customers, or is that left to specialized fiefdoms that brook no challenge?

I look at my co-workers and realize that one of them learns very quickly about the external world by going on a daily jaunt on the Web. Much of his picture of the world depends on what he sees there, and that picture is very much up-to-date.

I like reading everything on a topic in a single day, so I'm more likely to visit *Computerworld's* library of publications or turn to the indexed online services that give me a long reference list. The Web is part of this, but my method is more like hanging out in the stacks than going Web-waltzing.

Another co-worker gravitates to the online chat sessions where technical self-help sessions are under way. And she frequently joins in.

I see no particular merit to my way of learning over the others, and I don't hesitate to pick the brains of others, knowing their strengths. I do see our desktop computers extending our strengths and allowing us to make use of them in different ways. We take it for granted that we can find out what we want to know because the computer has done such an impressive job of extending our reach.

Attitudes within your organization toward experimentation and risk-taking are also important. If someone tries a new way of doing things and it fails, is he congratulated or excoriated? Is doing things a new way viewed as a learning vehicle in itself? It should be.

Too often, learning is seen as a formal process; one party imparts learning to another. "The mere presence of traditional training isn't sufficient; it must be accomplished by a palpable sense that one is never finished learning," according to the *Sloan Review*.

In this new information nation, it isn't the PC itself that is key, but it has been key to giving us the sense that we can learn what we need to know. Cultivating that belief is today's difference between success and failure.

Babcock is Computerworld's technical editor. His Internet address is charles_babcock@cw.com.

The Back Page

alt.cw

Dispatches & images from the fringes of the electronic frontier

CHANGING YOUR IMAGE

Don't have an in-house graphics wizard? Send your images to the Imaging Machine (www.vrl.com), which will transform them using a variety of graphics-editing techniques and filters that you select. The tricks include defining edges, embossing, flopping, blurring, high-contrasting, making negatives and combining images. The Web-based service is free from Visioneering Research Laboratory in Las Cruces, N.M.

Tirad talk

Wordsmiths at Lake Superior State University in Sault Ste. Marie, Mich., are, like, getting irritated. The school has released its 21st annual list of words and phrases that should be banished because they're misused, overused or useless — and the news isn't good for the high-tech community. "Multitasking" should be banned, said a teacher in Perry, Mich., who claimed that "doing several things at once" is sufficient. "Downtime" is fine for computers, but not humans, ruled one English professor. Meanwhile, "outsourcing" and its cousin "downsizing" were ridiculed.

Virus scum

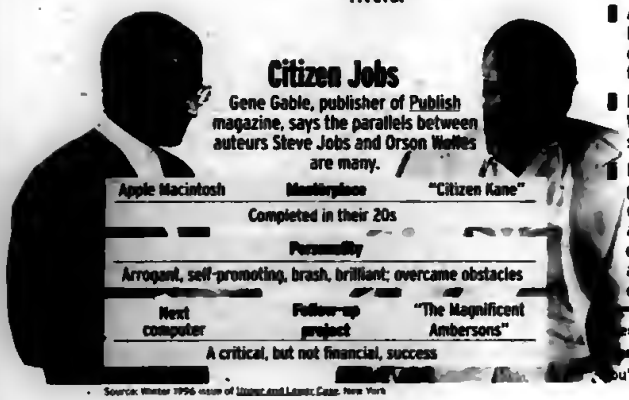
Sci-fi writer and digerati member Bruce Sterling acknowledges he's a hacker-sympathizer. But he draws the line at virus writers, whom he calls "antisocial moron kids" in an article for IBM's antivirus webzine (www.av.ibm.com). "The thing that truly disgusts me about virus writers is their weirdly gratuitous meanness," he writes. "They poison the digital wells and the flowing rivers."

Digital archives

TEN YEARS AGO
(JANUARY 1987)

- **Apple** unveils the overdue **AppleShare file server**, a sign that it's serious about the corporate market.
- The Intel **80386** chip is described as **"lightning fast."**
- Headline: **"Windows to play role as 386 tool."**
- **Ross Perot** invests $20 million in **Steve Jobs'** start-up, **Next Software.**
- **Alabama bans PCs** from its legislative chamber because of the annoying "tap, tap, tap."
- Headline: "Stumbling in DP, **Wang** will post loss; cuts salaries, jobs."
- Enrollment in college computer science programs is dropping because students are disillusioned by the **computer industry slump** and the **demanding nature of the field.**

Send your alt.cw contributions to **alts@cw.com.** If your item is used, you'll receive a cool T-shirt.



Source: Winter 1996 issue of Viewer and Lenses Gazette, New York

Inside Lines

Welcome to the Web

Internet newbies who visit the Internet Society's Web site at www.isoc.org can click on a button labeled, "What is the Internet?" Last week, that led to a long delay followed by the message: "There was no response. The server could be down or not responding." Yup, that's the Internet.

HP slashes Unix workstation prices

Call it the Wintel effect, or maybe it's a reaction to similar price cuts by other RISC vendors, but Hewlett-Packard today will roll back prices across its Unix technical workstation lineup by up to 40%. For example, the price of an entry-level B-class workstation will be reduced by 37%, from $12,700 to $8,000. Similarly, the price of a midlevel C-class workstation has been knocked back 38%, from $33,000 to $21,000.

Time flies when you're cracking code

PGCrypto, a desktop encryption product from McAfee Network Security and Management in Santa Clara, Calif., was promoted in a recent news release as follows: "PGCrypto's encryption is so powerful, McAfee estimates it would take 1 trillion supercomputers, which could each test a trillion keys per second, about 465 trillion centuries to break a PGCrypto code."

Well, it's a good thing they said "about." A billion centuries here and a trillion centuries there, and sooner or later you're talking real numbers.

Walk this way, surf this way

Perhaps this is a reflection of just how hip the 'net is. Keith Cerdo, a 20-year entertainment industry veteran who was most recently co-manager for the band Aerosmith, has been appointed executive vice president in charge of strategic marketing and new business development at Patel Entertainment Network. The Guilford, Conn.-based celebrity Internet service's holdings include Supermodel.com and Superstars.com.

Apples and cookies

The beta version of Apple's Cyberdog 2.0 Web browser, available at cyberdog.apple.com, adds support for cookies — the files that Web sites can use to store data on your hard disk drive — and includes commands to block or erase cookies. The erase command's name? Toss Cookies.

IBM to launch 'lite' laptops

Word has it that IBM will shortly release a no-frills notebook aimed at road warriors who aren't interested in the power and fancy multimedia of recent releases. Sources say IBM will position the new low-end notebooks for those users who are simply interested in getting and receiving data and in being connected to the office vs. having the capability to give high-powered sales presentations.

Reusable templates

Some technology pros dabble in journalism, but one IS manager is taking it a step further. John Williams, who was most recently director of IT architecture and standards in the IT services department at Carolina Power and Light, is joining *Object Magazine* in New York as its new editor. Having already written a variety of feature stories in the past, Williams is also the author of *What Every Software Manager Must Know To Succeed With Object Technology.*

It's only January, and we already have our nominee for the dumbest book of 1997. It's The Original Internet Address Book, *published by Prentice-Hall. For $5.95, you get a little blue book to write down all your favorite Internet addresses. We think it's just the thing to own if you have a version of Netscape that doesn't have bookmarks, or want to log onto your favorite Web sites when your computer crashes. If you've seen any dumb books lately, or have anything else to share, get in touch with news editor Patricia Keefe at patricia_keefe@cw.com or call (508) 820-8183.*

PHOTOS, DEREK JOBE/FOR APPLEWOOD; DEREK WELLES/MOVIE STILL ARCHIVES

HR MANAGEMENT SYSTEMS

Finally, an HR system that understands "Can I get back to you on that?" is not an appropriate response to your CEO.

adp.com

1 800 CALL ADP
ext. 389

ADP

Give Forté A Shot At The S.O.B.

You know what S.O.B. we're talking about. That "Same Old Blackhole" development project that's been on the table for months. That high-risk/no-reward heterogeneous, quickly changing project that nobody wants to sign up for because it'll chew up people, money and careers. We're Forté, the fastest growing systems software company ever. We cut our teeth on this type of S.O.B.

Nobody but Forté lets you develop enterprise-wide applications as if they were to run on a single computer, and then automatically and dynamically distribute them as the system grows, across however many servers and to however many clients, irrespective of platform, operating system, LAN, WAN, Web or RDBMS.

Want that S.O.B. off your backlog? Reserve your free seat in our next seminar via the Web. Or call 800-90FORTE (800-903-6783), today.

FORTÉ

www.forte.com/cw

California	
Irvine	Jan 22
Los Angeles	Jan 30
San Francisco	Feb 4
San Jose	Jan 30
Canada	
Calgary, Alberta	Feb 6
Montreal, Quebec	Feb 11
Toronto, Ontario	Jan 23
Colorado	
Denver	Feb 13
Connecticut	
Stamford	Jan 24
Florida	
Orlando	Jan 21
Georgia	
Atlanta	Feb 13
Illinois	
Chicago	Jan 28
Massachusetts	
Boston	Feb 12
Michigan	
Dearborn	Feb 4
Minnesota	
Minneapolis	Jan 29
Missouri	
Kansas City	Jan 21
St. Louis	Jan 21
New Jersey	
Somerset	Feb 6
New York	
New York City	Jan 29
Albany	Jan 28
North Carolina	
Durham	Jan 23
Ohio	
Columbus	Jan 22
Oregon	
Portland	Jan 30
Pennsylvania	
King of Prussia	Feb 4
Texas	
Austin	Jan 24
Dallas	Jan 23
Virginia	
Vienna	Jan 28

©1996 Forté Software, Inc. Forté is a registered trademark and the Forté Application Environment and the Forté logo are trademarks of Forté Software, Inc. From outside the US call 510-869-3400 All other trademarks acknowledged TRIA